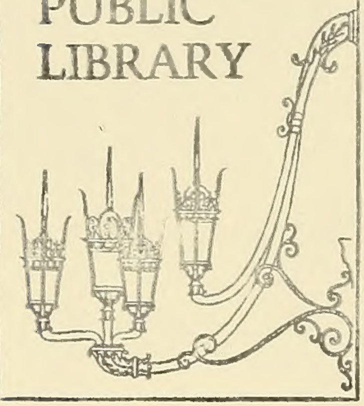
BOSTON
PUBLIC
LIBRARY

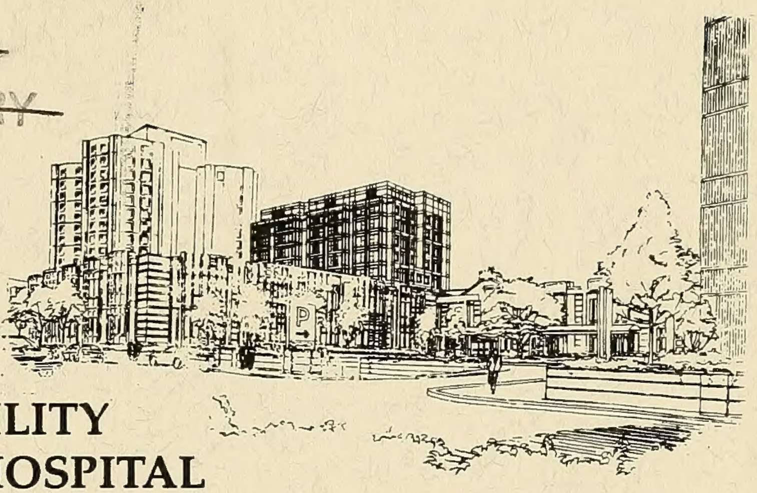


Digitized by the Internet Archive
in 2011 with funding from
Boston Public Library

http://www.archive.org/details/clinicalsupportf00hmma

~~PROPERTY OF~~
~~THE BRA LIBRARY~~

GOVDOC
BRA
4428



CLINICAL SUPPORT FACILITY
BRIGHAM & WOMEN'S HOSPITAL

FINAL PROJECT IMPACT REPORT

JULY, 1991

B W H

by: HMM Associates, Inc.

BOSTON
PUBLIC
LIBRARY

SUBMITTED TO:

BOSTON REDEVELOPMENT AUTHORITY
1 CITY HALL SQUARE
BOSTON, MA 02201

SUBMITTED BY:
BRIGHAM & WOMEN'S HOSPITAL, INC.
75 FRANCIS STREET
BOSTON, MA 02115

CLINICAL SUPPORT FACILITY

BRIGHAM & WOMEN'S HOSPITAL, INC.
BOSTON, MASSACHUSETTS

FINAL PROJECT IMPACT REPORT

July, 1991

Submitted to:

BOSTON REDEVELOPMENT AUTHORITY
1 City Hall Square
Boston, Massachusetts 02201

Submitted by:

BRIGHAM & WOMEN'S HOSPITAL, INC.
75 Francis Street
Boston, Massachusetts 02150

5185-303/ENV-5488

TABLE OF CONTENTS

Page

I. EXECUTIVE SUMMARY

1.0 INTRODUCTION I-1
2.0 SITE LOCATION AND PROJECT DESCRIPTION I-1
3.0 SUMMARY OF ENVIRONMENTAL IMPACTS I-7
  3.1 Wind Qualitative Assessment I-7
  3.2 Shadow Impacts I-7
  3.3 Geotechnical Impacts I-7
  3.4 Solid Wastes I-8
  3.5 Construction Impacts I-8
  3.6 Rodent Controls I-9
4.0 PROJECT UPDATE I-9
  4.1 Introduction I-9
  4.2 Additional Technical Efforts I-9

II. GENERAL INFORMATION

1.0 APPLICANT INFORMATION II-1
  1.1 Project Identification II-1
  1.2 Development Team II-1
2.0 LEGAL INFORMATION II-4
  2.1 Legal Actions Pending Concerning the Proposed Project II-4
  2.2 Evidence of Site Control Over the Project Area II-4
3.0 FINANCIAL INFORMATION II-4
4.0 PROJECT AREA II-6
5.0 REGULATORY CONTROLS AND PERMITS II-6
  5.1 Zoning Relief Required for the Project II-6
  5.2 Anticipated Permits II-9
  5.3 Massachusetts Environmental Policy Act Review II-10
6.0 COMMUNITY GROUPS II-11
  6.1 Interested Parties II-11
  6.2 List of Meetings II-12
  6.3 Displacees II-12

TABLE OF CONTENTS (Continued)

Page

7.0 PUBLIC BENEFITS II-12
  7.1 Affordable Housing Contributions II-13
    7.1.1 BWH Properties Donated for Housing II-13
    7.1.2 Housing Creation Funds II-13
  7.2 Employment and Employment Training II-13
    7.2.1 Youth Employment II-14
    7.2.2 Construction Jobs II-14
    7.2.3 Permanent Jobs II-15
    7.2.4 Training Center II-15
    7.2.5 Employment Outreach to Mission Hill Residents II-15
    7.2.6 List of Examples of Employment and Training Initiatives in Which BWH is Actively Involved II-16
  7.3 Other Public Benefits II-25
    7.3.1 Day Care II-25
    7.3.2 Neighborhood Business Participation II-25
    7.3.3 Parking II-25
    7.3.4 Community Health Care Services II-26
    7.3.5 Mission Hill "Good Neighbor" Program II-27

III. ENVIRONMENTAL PROTECTION COMPONENT

1.0 WIND QUALITATIVE ASSESSMENT III-1
  1.1 Introduction III-1
  1.2 Clinical Support Facility and Its Surroundings III-2
    1.2.1 Description of the Project III-2
    1.2.2 The Area Surrounding the Site III-2
  1.3 The Wind Climate in Boston III-4
    1.3.1 Variation of Average Velocity with Height III-4
    1.3.2 Statistical Description of the Wind III-4
  1.4 Criteria for Pedestrian Level Winds III-8
  1.5 The Northwest (Winter) Winds III-11
  1.6 The Southwest (Summer) Winds III-13

TABLE OF CONTENTS (Continued)

Page

1.7 Easterly (Storm) Winds III-18
1.8 Summary III-21
1.9 References III-21
2.0 SHADOW IMPACTS III-22
2.1 Introduction III-22
2.2 Conclusions III-22
3.0 GEOTECHNICAL IMPACTS III-35
3.1 Existing Conditions III-35
3.1.1 Existing Site Conditions III-35
3.1.2 Adjacent Buildings III-35
3.1.3 Subsurface Soil and Rock Conditions III-37
3.1.4 Groundwater III-38
3.2 Proposed Project III-38
3.2.1 Proposed Foundation Type III-38
3.2.2 Excavation Methodology III-38
3.2.3 Excavation Support III-39
3.2.4 Construction Dewatering III-41
3.2.5 MGL Chapter 21E Issues III-41
4.0 SOLID WASTES III-42
4.1 Waste Management Plan III-42
4.2 Recycling Plan III-43
5.0 CONSTRUCTION IMPACTS III-44
5.1 Dust Controls III-44
5.2 Noise Impacts III-44
5.3 Construction Staging/Construction Worker Parking III-44
5.4 Construction Schedule III-44
5.5 Construction Vehicles III-45
5.6 Demolition and Asbestos Removal III-45
5.7 Measures to Protect Public Safety III-47
6.0 RODENT CONTROL III-47

TABLE OF CONTENTS (Continued)

Page

IV. URBAN DESIGN COMPONENT IV-1

1.0 SITE LOCATION IV-1
2.0 PROJECT DESCRIPTION IV-1
  2.1 Building Program IV-1
  2.2 Phased Construction IV-6
  2.3 Original ENF/Initial Project Change IV-8
  2.4 Revised Project Change IV-9
  2.5 Building Design IV-14
  2.6 Pedestrian Access and Urban Design Issues IV-17
  2.7 Brigham Green IV-21
  2.8 Other On-Campus Projects IV-21
  2.9 Tower Lobby Expansion IV-21
  2.10 Project Schedule IV-24
  2.11 Schematic Design Submission IV-26
  2.12 Model Photographs IV-72
  2.13 Site Photographs IV-79

V. HISTORIC RESOURCES COMPONENT V-1

1.0 INTRODUCTION V-1
2.0 SITE HISTORY V-7
3.0 CULTURAL RESOURCES IN THE PROPOSED PROJECT VICINITY V-9
4.0 ANALYSIS OF POTENTIAL EFFECTS V-9
5.0 MITIGATION V-9

VI. INFRASTRUCTURE SYSTEMS COMPONENT VI-1

1.0 INTRODUCTION VI-1
2.0 SANITARY SEWER AND STORMWATER SYSTEM VI-3
  2.1 Description of Existing Facilities VI-3

TABLE OF CONTENTS (Continued)

Page

2.2 Capacity of Existing Facilities VI-3
2.3 Project Wastewater Generation VI-4
2.4 System Connections VI-5
2.5 Permitting Requirements/Mitigation VI-5
2.6 Project Storm Drainage VI-6
3.0 WATER DISTRIBUTION SYSTEM VI-6
3.1 Description of Existing Facilities VI-6
3.2 Capacity of Existing Facilities VI-8
3.3 Project Water Use VI-8
3.4 System Impacts VI-9
3.5 System Connections VI-9
3.6 Water System/Mitigation Measures VI-9
4.0 ENERGY SYSTEMS VI-10
4.1 Energy Use Strategies VI-10
4.2 Electric Service VI-10
4.3 Steam Service VI-10
4.4 Chilled Water VI-11
5.0 COMMUNICATIONS VI-12

VII. TRANSPORTATION ACCESS PLAN (SUMMARY) VII-1
1.0 STUDY METHODOLOGY VII-1
2.0 SUMMARY OF FINDINGS VII-1

TABLE OF CONTENTS (Continued)

APPENDICES

APPENDIX A - Boston Redevelopment Authority, Scoping Determination for Brigham & Women's Hospital Clinical Support Facility (October 15, 1990), and Preliminary Adequacy Determination with Technical Appendix for Brigham & Women's Hospital Clinical Support Facility (June 20, 1991)

APPENDIX B - Environmental Notification Form Submission to Executive Office of Environmental Affairs, December 15, 1989, and Certificate of the EOEA Secretary, January 25, 1990

APPENDIX C - Notice of Project Change Submission to Executive Office of Environmental Affairs, May 10, 1990 and Correspondence from Assistant Secretary, EOEA, July 23, 1990

APPENDIX D - Revised Notice of Project Change Submission to Executive Office of Environmental Affairs, February 15, 1991, and Correspondence from Assistant Secretary, EOEA, March 28, 1991

APPENDIX E - Revised Transportation Access Plan for the Clinical Support Facility, Brigham & Women's Hospital, July 1991

APPENDIX F - Site History Information

APPENDIX G - Letter from Steven R. Pendery, City Archaeologist, July 11, 1991

APPENDIX H - Letter from Robert B. Debonis, Robert W. Sullivan, Inc., July 1, 1991

APPENDIX I - Infrastructure System Capacity Verification from MATEP

LIST OF FIGURES (Continued)

		Page
IV-5	Aerial View Looking North	IV-26
IV-6	L2 Level Plan	IV-27
IV-7	L1 Level Plan	IV-28
IV-8	L1 Intermediate Level Floor Plan	IV-29
IV-9	Ground Level Plan	IV-30
IV-10	Tower Lobby Plan	IV-31
IV-11	Main Level Plan	IV-32
IV-12	Level 3 Plan	IV-33
IV-13	3/4 Intermediate Level Floor Plan	IV-34
IV-14	Level 4 Plan (LDR)	IV-35
IV-15	Level 5 Plan (NICU)	IV-36
IV-16	Level 6-9 Plan (Initial Phase)	IV-37
IV-17	Penthouse Level Plan	IV-38
IV-18	Roof Level Plans	IV-39
IV-19	Shattuck Street Elevation (North)	IV-40
IV-20	East Elevation	IV-41
IV-21	Francis Street Elevation (South)	IV-42
IV-22	West Elevation	IV-43
IV-23	Building Section - Transverse	IV-44
IV-24	Building Section - Longitudinal	IV-45
IV-25	Perspective View from Francis Street	IV-46
IV-26	Perspective View from Binney Street	IV-47
IV-27	Perspective View from Shattuck Street Looking West	IV-48
IV-28	Perspective Views: From Shattuck Street, From Tower, From Blackfan Street	IV-49
IV-29	Perspective Views: Interior at Tower Lobby, Interior at CSF Ground floor Lobby	IV-50
IV-30	Perspective Views of Tower Lobby	IV-51
IV-31	L2 Level Plan	IV-52
IV-32	L1 Level Plan	IV-53
IV-33	L1 Intermediate Level Floor Plan	IV-54
IV-34	Ground Level Plan	IV-55

LIST OF FIGURES (Continued)

		Page
IV-35	Main Level Plan	IV-56
IV-36	Level 3 Plan	IV-57
IV-37	3/4 Intermediate Level Floor Plan	IV-58
IV-38	Level 4 Plan (LDR)	IV-59
IV-39	Level 5 Plan (NICU)	IV-60
IV-40	Level 6-9 Plan (Initial Phase)	IV-61
IV-41	Penthouse Level Plan	IV-62
IV-42	Roof Level Plans (Show Skylights)	IV-63
IV-43	North Elevation	IV-64
IV-44	East Elevation	IV-65
IV-45	South Elevation	IV-66
IV-46	West Elevation	IV-67
IV-47	Partial Elevation / Section - North	IV-68
IV-48	Partial Elevation / Section - South	IV-69
IV-49	Wall Section Details	IV-70
IV-50	Pedestrian Bridge to Children's Hospital	IV-71

Model Photographs IV-72

Plan View IV-73
Aerial View of Northwest Corner IV-74
View of Northwest Corner Looking East Down Shattuck St. IV-75
View of Northwest Corner at Tower Lobby Courtyard IV-76
Aerial View of Northeast Corner IV-77
View of Northeast Corner Looking West Down Shattuck St. IV-78

Site Photographs IV-79

View on Huntington Avenue Looking West Down Francis St. IV-80
View Looking Northwest on Francis Street From ASBII Courtyard IV-81
View Looking North From Francis Street at the ASBII Courtyard IV-82
View Looking East on Francis Street at Vining Street Intersection IV-83

LIST OF FIGURES (Continued)

		Page
	View on Binney Street Looking East Down Shattuck Street	IV-84
	View of Existing Tackaberry Building Looking East Down Shattuck St.	IV-85
	View From Blackfan Street of Existing Ambulance Court and Tower Connector	IV-86
	View of Existing Pedestrian Bridge to Children's Hospital on Shattuck Street Looking East	IV-87
	View Looking West on Shattuck Street From East Campus	IV-88
	View of Existing Tackaberry Building on Shattuck Street Looking West	IV-89
V-1	Location of Historic Structures Near the Project Site	V-2
V-2	View of 55 Shattuck Street and Proposed Site	V-3
V-3	View of Proposed Site From Upper Level of Harvard Medical School Quadrangle	V-4
V-4	View of Harvard Medical School Quadrangle Between Shattuck Street and Longwood Avenue	V-5
V-5	View west of BWH's Thorn Building Looking East From The Project Site	V-6
VI-1	Sanitary Wastewater Routing	VI-2
VI-2	BWSC Water Distribution System in the Vicinity of Project Site	VI-7

LIST OF TABLES

Page

II-1 Brigham & Women's Hospital Clinical Support Facility, Project Budget, April 8, 1991 II-5

III-1 Melbourne's Criteria for 100-Hour Return Period Pedestrian Level Winds III-10

IV-1 Brigham & Women's Hospital, Clinical Support Facility, Building Program Report IV-7

IV-2 Brigham & Women's Hospital, Clinical Support Facility, Project Changes IV-11

IV-3 Brigham & Women's Hospital, Project Schedule IV-25

VI-1 Brigham & Women's Hospital Sewer Capacity Evaluation VI-4

VI-2 Hydrant Flow Tests, Brigham & Women's Hospital VI-8

B W H

I. EXECUTIVE SUMMARY

I. EXECUTIVE SUMMARY

1.0 INTRODUCTION

On April 30, 1990, Brigham and Women's Hospital ("BWH") submitted a Project Notification Form (PNF) to the Boston Redevelopment Authority (BRA) for construction of a Clinical Support Facility. On October 15, 1990, the BRA issued a Scoping Determination (Appendix A) for the Draft Project Impact Report (DPIR) in response to the PNF. On June 20, 1991, the BRA issued a Preliminary Adequacy Determination (PAD) on the DPIR (Appendix A).

The DPIR scope referenced inclusion of the following major sections: general information, a transportation access plan component, urban design component, infrastructure systems component, historic resources component, and an environmental protection component, including an analysis of potential impacts in each of the following areas:

- Wind
- Shadow
- Geotechnical Impact
- Solid Wastes
- Construction Impacts
- Rodent Control

The PAD requirements referenced changes to the Executive Summary, General Information, Transportation, Wind, Shadow, Geotechnical, Rodent Control, Historic Resources and Infrastructure System's sections.

All of these above referenced sections and revisions are included in this document. Appendix E contains the complete "Revised Transportation Access Plan for the Clinical Support Facility, Brigham and Women's Hospital", prepared by BWH's traffic consultant, Vanasse Hangen Brustlin, Inc.

2.0 SITE LOCATION AND PROJECT DESCRIPTION

The proposed Clinical Support Facility project is located in the Longwood Medical Area along Shattuck Street, east of Binney Street on the campus of the Brigham and Women's Hospital. The block on which the Clinical Support Facility will be located is bounded by Shattuck Street, Binney Street, Francis Street, and Huntington Avenue. Figure I-1 is a Site Location Plan. All of the nearby buildings contain hospital or medical area related uses. In addition to Brigham and Women's Hospital uses, nearby buildings are occupied by Childrens's Hospital, Dana Farber Cancer Institute, and Harvard University Medical School. The Medical Area Total Energy Plant (MATEP) is located to the west of the Hospital on the block bounded by Binney Street, Francis Street, and Brookline Avenue, and the Servicecenter garage and offices are opposite the MATEP facility on the southside of Francis Street. Residential properties within the Mission Hill neighborhood are located on the southside of Francis Street opposite the hospital, and the Mission Park Housing Complex is located two blocks from the hospital on the southside of Vining Street.

Brigham and Women's Hospital proposes to construct a 234,000 FAR gross square foot Clinical Support Facility adjacent to its existing Inpatient Bed Tower (see Figure I-1). The new Clinical Support Facility will replace a 70 year-old, 31,000 square foot building to be demolished, for a net new construction of 203,000 FAR gross square feet.

The principal objective of the project will be to provide Obstetrical Support Services and Obstetrical Outpatient Services. Present patient volumes of these functions greatly exceed current facility capabilities. The Hospital's specific program is discussed in the following paragraphs.

- Labor and Delivery

  Annual births at BWH have increased from 6,300 in FY80 to over 10,500 in FY90. Current BWH L&D facilities were designed in the mid-1970's for much lower levels of activity than at present. Current numbers of delivery rooms and overall department support space are significantly below DPH/DON standards.

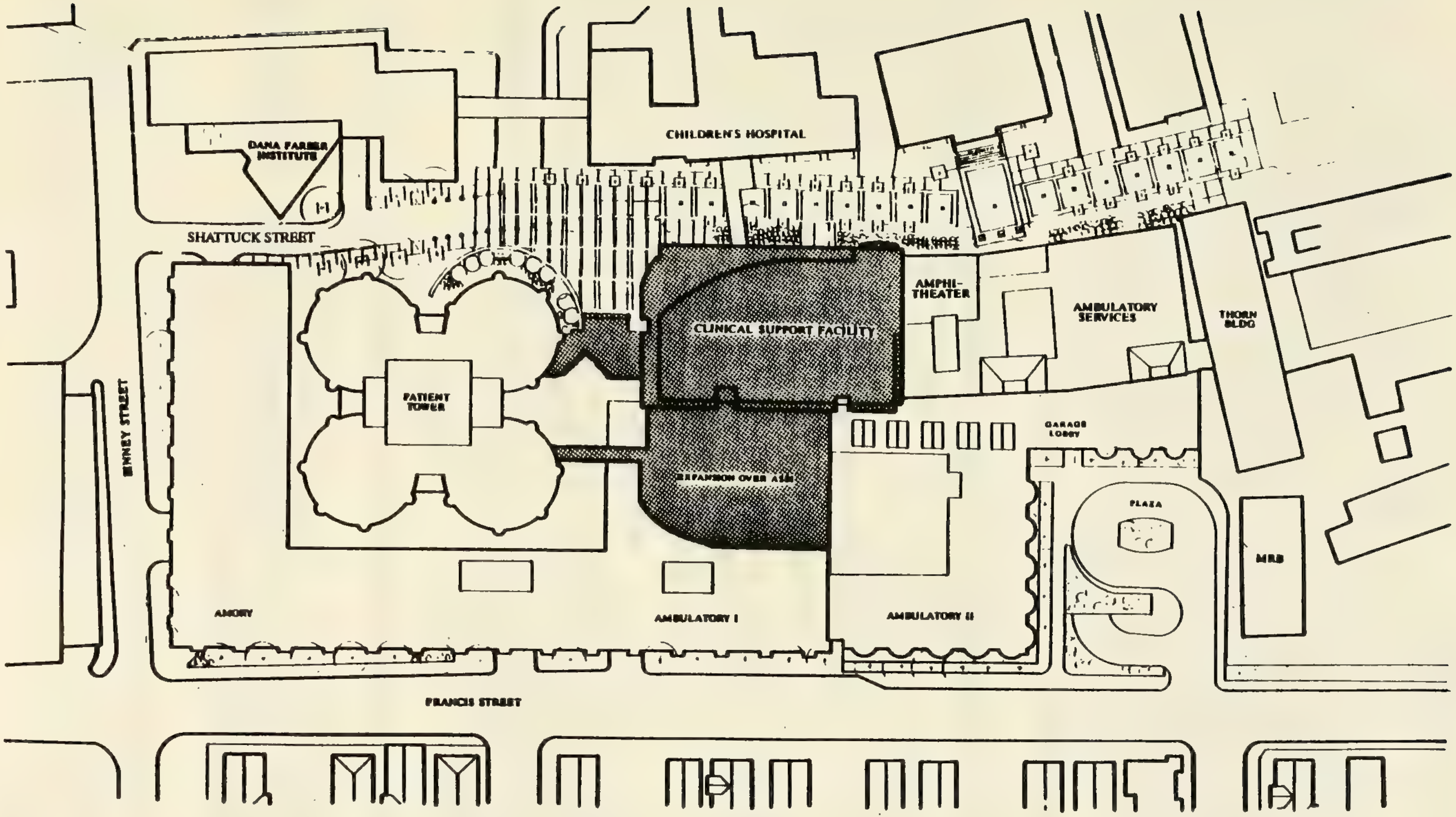


FIGURE I-1: SITE LOCATION PLAN

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

o Neonatal Intensive Care

The existing 46-bed BWH NICU has been expanded twice since 1980. Despite these changes, the current NICU has only 267 gross square feet per bed versus the 350-450 GSF per bed existing in other comparable facilities. Deficiencies that cannot be remedied in the present NICU location include deficient storage space, inadequate numbers of breast-feeding rooms, absence of family support space, insufficient space for the entire patient care team to access the baby, and general high levels of noise and congestion.

o OB Faculty Clinic and OB Faculty Group Practices

At present, approximately 1/3 of BWH births are provided by BWH full-time faculty, 1/3 by HCHP physicians, and 1/3 by credentialed community practitioners. An increased need for hospital-based faculty to perform deliveries is expected in future years as larger numbers of private physicians elect to practice GYN only and as younger private obstetricians limit OB workloads for life-style and economic reasons. BWH plans to meet this greater need for hospital-based physician services through an expansion of its Faculty OB Clinic and through formation of several new four-person faculty groups concentrating on routine obstetrical services. Two of these latter groups have been established in the past two years, with all newly recruited members agreeing also to provide staffing part-time to neighborhood health centers. The proposed project will provide space for this continued expansion of hospital-based outpatient services.

o Support Space for Patients, Families and Special High Risk Populations

Within all of the above OB support services, the project will remedy present greatly inadequate support space for patients, families, and special high risk populations (e.g. adolescents).

A secondary objective of the project will be to provide replacement space for existing functions in the deficient 70-year old Tackaberry Building (to be demolished), as well as additional space for some other hospital support functions:

Tackaberry Replacement Space:

- ER Administration
- EMT Lounge
- Telecommunications
- Pathology Administration
- Cytology
- Operations Conference Room

Additional Support Space:

- Non-Invasive Cardiology
- House Staff Study/Lockers/ On-Call Rooms
- Anesthesia Offices
- Biomedical Engineering
- Bed Park/Repair
- E.R. Security

- ER Administration: Administrative offices for existing emergency room.

- EMT Lounge: Locker and lounge space for Emergency Medical Technicians based at the hospital.

- Telecommunications: Relocation of the hospital's operator switchboards.

- Operations Conference Room: A large conference room assigned to BWH Administrative Departments.

- Non-Invasive Cardiology: This service provides echocardiogram, electrocardiogram and other cardiac testing services throughout the hospital, as well as receiving outpatient visitors. The volume of procedures performed by the department has approximately doubled from 1983 to 1988 with no expansion of the department's physical space.

- House Staff Support Areas: Provisions for on-call rooms, lockers, library and conference areas for BWH medical staff to alleviate shortage of these support areas existing since the initial design of the BWH Tower Building.

- Anesthesia Offices: The current department of Anesthesia Offices are poorly located in an area of the L2 basement floor level dedicated to kitchen, linen and other service functions. The department will be vacated to permit a relocation of the Housekeeping Department to this area and also to improve crowded office conditions.

- Biomedical Engineering: The Department of Biomedical Engineering maintains medical equipment used throughout the Hospital. This department is currently located in inefficient quarters, remote from the Tower Building which houses most of the medical equipment on campus.

- Bed Park and Repair: Storage space will be provided for unused beds and equipment in need of repair. The hospital currently lacks storage for these beds.

The BWH building to be demolished (Tackaberry) has reached the end of its useful life. Deficiencies of this building were documented in the Hospital's September 1, 1989 DON application.

3.0 SUMMARY OF ENVIRONMENTAL IMPACTS

3.1 Wind Qualitative Assessment

A qualitative assessment of pedestrian level winds was conducted by Frank H. Durgin, P.E. and HMM Associates, Inc. for the proposed BWH Clinical Support Facility site. Existing windy areas noted (Melbourne 2 or 3) are along Binney Street between Francis and Shattuck Streets, and close to the east, north and west corners of the Patient Tower. The Clinical Support Facility addition may increase windiness at the east corner of the Patient Tower and possibly in the short street opposite that corner heading to Children's Hospital. Windy conditions (not exceeding Melbourne 3) may also occur at the north corner of the Clinical Support Facility, although the landscaping at the Patient Tower base is seen as mitigating increased windiness along Shattuck Street.

3.2 Shadow Impacts

The majority of the new shade zones created by the Clinical Support Facility occur on the rooftops of the adjacent lower buildings, with the exception of the Patient Tower during early morning hours. During the winter, shadows are at their maximum length on the rooftops. During the summer, shadows cast on pedestrian areas are minimal. During the spring and fall, shadows will be more intense on the exterior courtyard space between the existing patient tower and the new facility.

The CSF shading of the courtyard will help create comfortable eating areas during the summer months. In the fall, when sunlight is more desirable, the courtyard is not expected to be in shade during the lunch time hours. In the spring, more shade will occur in the lunch time period, but the weather is often cooler and more inclement suggesting less use of the courtyard.

3.3 Geotechnical Impacts

The CSF is to be founded primarily on a mat foundation bearing on the marine deposits, glacial till, or bedrock. Construction of building foundations will require excavations of 25 to 40 feet below present site grade. The primary lateral excavation support being considered is soldier piles and lagging utilizing a combination of tie-backs and internal bracing. The existing Amphitheatre and Surgical Building will require underpinning for protection from excessive ground movement prior to general site excavation. Construction dewatering below the groundwater could be accomplished by deep pumping wells or vacuum well points. No adverse impact from construction dewatering is anticipated since water levels would only be drawn down a few feet below their present levels.

3.4 Solid Wastes

Waste from the Clinical Support Facility falls into three categories: trash, biomedical waste and infectious waste. The Servicenter Building will house compactors for the CSF trash. Biomedical waste will be transported to by a licensed carrier to an approved and secured landfill. Infectious waste, after being sterilized and incinerated in existing on-site facilities will be disposed of in an approved off-site landfill. Cardboard and office paper will be recycled as part of BWH's on-going recycling plan with MASCO and Browning Ferris Industries.

3.5 Construction Impacts

Total construction duration is expected to be 30 months with a work shift of 7:00 AM to 3:30 PM. Average daily work force is expected to be approximately 165 workers at peak construction months with an average of 95 workers per month during the construction period. Construction techniques will minimize dust and noise generation. Parking for construction workers will not be allowed on-site with two off-site locations being utilized by shuttle bus connections to the site. Truck volume to the site, 24 trucks at the busiest periods (or 3 per hour) during excavation, will follow proposed truck routes to avoid creating impacts on Francis Street. The site will be enclosed with a fence to insure that there are no safety hazards for pedestrians or nearby inhabitants.

3.6 Rodent Controls

Prior to the start of demolition, a rodent control subcontractor will be retained to be responsible for monitoring the construction site to eliminate any potential rodent control problems in accordance with City and State regulations. There is no special rodent control criteria or protocol to be followed by contractors in the Longwood Medical Area according to the City's Rodent Control Supervisor within Boston's Inspectional Services Department.

4.0 PROJECT UPDATE

4.1 Introduction

Work on the Clinical Facility Project (CSF) has continued at a significant pace since the filing of the DPIR on February 15, 1991. During this period refinements have been made through the Authority's design review process. On March 27, 1991 BWH obtained an amendment to the Development Plan for PDA #10 from the BRA to permit the construction of the CSF, and to amend the zoning map to include the additional area within Shattuck Street. On May 1, 1991 the Boston Zoning Commission approved the amendment to the PDA. Subsequently, on May 21, 1991, relief for the zoning deviations in the form of exceptions in accordance with Article 6A of the Zoning Code was approved by the Boston Board of Appeal.

The Revised Notice of Project Change filed on February 15, 1991 outlining the increased floor area from that presented in the Environmental Notification Form was reviewed by the Executive Office of Environmental Affairs (EOEA). On March 28, 1991, EOEA determined that no environmental impact report was required.

4.2 Additional Technical Efforts

The majority of additional technical information presented in the FPIR is related to the Infrastructure Systems Component. The BRA's Preliminary Adequacy Determination (PAD) required a fuller evaluation on existing water and sewer system and other utility/energy systems (adequacy and capacity). This analysis was to include indication of consultation with affected utilities and confirmation of the ability of MATEP to supply the proposed project's HVAC and electrical needs. Other information requested in the PAD is also supplied in the FPIR Infrastructure Systems Component.

In addition, the PAD requested clarification or revisions to the transportation component related to morning peak hour calculations at Huntington Avenue/Francis Street and further review of the impact of construction worker departures on peak hour volumes. Clarifications or revisions have also been completed to the wind qualitative assessment, shadow impacts, geotechnical impacts, rodent controls and historic resources sections in the FPIR.

B W H

II. GENERAL INFORMATION

II. GENERAL INFORMATION

1.0 APPLICANT INFORMATION

1.1 Project Identification

Project Name:	Clinical Support Facility Brigham & Women's Hospital, Inc. Boston, MA
Address/Location:	75 Francis Street, on the Brigham and Women's Hospital Campus, bounded by Shattuck Street, Binney Street, Francis Street, and Huntington Avenue.
Project Description:	Brigham and Women's Hospital proposes to construct a 234,000 FAR gross square foot Clinical Support Facility (CSF) adjacent to its existing Inpatient Bed Tower along Shattuck Street. The new facility will have a building height of approximately 165 feet. The CSF will replace the 70-year old, 31,000 square foot Tackaberry Building which will be demolished.

1.2 Development Team

Owner/Developer:	Brigham and Women's Hospital, Inc. 75 Francis Street Boston, MA 02115 Joseph Piechocki Assistant Vice President for Administrative Services
Architect:	Tsoi/Kobus and Associates 50 Church Street Cambridge, MA 02138 (617) 491-3067 Richard Kobus Richard Moon

Attorney:

Rackemann, Sawyer & Brewster
One Financial Center
Boston, MA 02111-2659
(617) 542-2300

Brian S. Meyer, Esquire
Mary Marshall, Esquire

Civil Engineering
Land Survey Consultant:

R.H. Cole
Suite D26
80 Washington Street
Norwell, MA 02061
(617) 878-6955

B.D. Billingham

Cost Consultant:

Vermeulen Inc.
10 Church Street, North
Richmond Hill, Ontario L4C 3E7
(416) 737-0343

Richard Vermeulen

Development Consultant:

McDermott/O'Neill & Associates
75 State Street
Suite 2130
Boston, MA 02109
(617) 737-7600

Carole Pelletier

Environmental Consultant:

HMM Associates, Inc.
196 Baker Avenue
Concord, MA 01742
(508) 371-4000

Mitchell L. Fischman

Geotechnical:

Haley & Aldrich
58 Charles Street
Cambridge, MA 02141
(617) 494-1606

Elliot Steinberg

HVAC and Electrical Engineer:

BR&A
1320 Soldiers Field Road
Boston, MA 02135
(617) 254-0016

Ted Athanas

Landscape Architect:

John Copley and Associates
96 South street
Boston, MA 02111
(617) 257-7345

John Copley

Master Plan Consultant and Architect:

Kaplan McLaughlin Diaz
222 Vallejo Street
San Francisco, CA 94111
(415) 398-5191

Plumbing/Fire Protection Engineer:

Robert W. Sullivan
302 Union Wharf
Boston, MA 02109
(617) 523-8227

Robert DeBonis

Pre-Construction Consultant and Construction Manager:

William A. Berry & Son, Inc.
100 Conifer Hill Drive
Danvers, MA 01923
(508) 774-1057

John Kavanagh III
Peter Campot

Structural Engineer:

Weidlinger Associates
44 Brattle Street
Cambridge, MA 02138
(617) 876-9666

Dieter Reich

Traffic Consultant:

Vanasse Hangen Brustlin, Inc.
101 Walnut Street
Watertown, MA 02272
(617) 924-1770

David Bohn

Wind Consultant:	Frank H. Durgin, P.E. 151 Lexington Street Belmont, MA 02178 (617) 253-2270

2.0 LEGAL INFORMATION

2.1 Legal Actions Pending Concerning the Proposed Project

BWH is not aware of any legal judgments or actions pending concerning the project.

2.2 Evidence of Site Control Over the Project Area

BWH is the sole fee owner of the project site except that one half of the width of Shattuck Street over which the bridge to Children's Hospital passes is owned by Children's Hospital. Shattuck Street is a private way and is fifty feet wide.

The twenty five feet of Shattuck Street southerly of the centerline are owned in fee by BWH. The twenty five feet northerly of the centerline are owned in fee by Children's Hospital and are within its PDA (PDA #29). The portion of the BWH's half of Shattuck Street which will be the site of the project development is located within BWH's PDA (PDA #10 described below).

3.0 FINANCIAL INFORMATION

BWH is considering financing alternatives including possible public agency financing. Project cost is currently estimated at approximately $65 million, as described in Table II-1, Clinical Support Facility, Project Budget, April 8, 1991.

TABLE II-1
BRIGHAM & WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY
PROJECT BUDGET
APRIL 8, 1991

		Approved DON Costs Floors L2 - 5	Shell Costs Floors 6 - 9
1.	Land Acquisition and Development	0	0
2.	Building Acquisition	0	0
3.	Construction Contract	$38,507,000	$10,936,000
4.	Fixed Equipment NIC	442,000	0
5.	Major Moveable Equipment	2,996,000	0
6.	Site and Soil Survey	125,000	0
7.	Architect and Engineering Cost	2,605,000	911,000
8.	Pre-Planning and Development	235,000	0
9.	Post Planning and Development	55,000	0
10.	Other (Linkage)	843,000	560,000
11.	Project Contingency	0 *	2,032,000
12.	Other Soft Costs	0 *	1,013,000
13.	Financing Cost	2,834,000	1,215,000
		$ 48,642,000	$ 16,667,000

TOTAL PROJECT BUDGET	$ 65,309,000

---

* For purposes of the Hospital's Determination of Need (DON) Application: project contingency and other soft costs are included in construction contract.

4.0 PROJECT AREA

Property Address: 75 Francis Street, Boston, Massachusetts

Planned Development Area #10 (PDA #10) is bounded southerly by Huntington Avenue and Francis Street, westerly by Binney Street, northerly by land of Dana Farber Cancer Institute, Inc., and of the Children's Hospital Corporation and by Shattuck Street (a private way), and easterly by land of the President and Fellows of Harvard College, Boston, Massachusetts, and consists of approximately 389,303 sq. ft. or 8.94 acres (including 7,225 sq. ft. within Shattuck Street). The site of the new construction is primarily contained in the lot known as the "New Hospital Area" which is within the PDA. See plan entitled "Subdivision Plan of Land in Boston, MA" consisting of two sheets, dated March 26, 1991, prepared by R.H. Cole Associates (Figure II-1 and II-2). A portion of the CSF extends above grade into the lots known as the "Remaining Old Peter Bent Hospital Area-1" and "ASB II Area", both of which are also located within PDA #10.

5.0 REGULATORY CONTROLS AND PERMITS

5.1 Zoning Relief Required for the Project

The Clinical Support Facility is located in PDA #10. Accordingly, relief for zoning deviations took the form of exceptions in accordance with Article 6A of the Zoning Code. On March 27, 1991, BWH obtained an Amendment to the Development Plan for PDA #10 from the BRA to permit the construction of the Clinical Support Facility and to amend the zoning map to include the additional area within Shattuck Street. The Boston Zoning Commission approved the Amendment to the PDA on May 1, 1991.

Exceptions under Article 6A were required for the following deviations from the Zoning Code, as described below. (Please note that zoning calculations were included in the applications to be provided to the Board of Appeal.)

1) Yards - Front, Side and Rear within PDA #10
2) Yard front within PDA #29 (Replacement Bridge to Children's Hospital)
3) Parapet Setback
4) Floor Area Ratio
5) Off-Street Loading

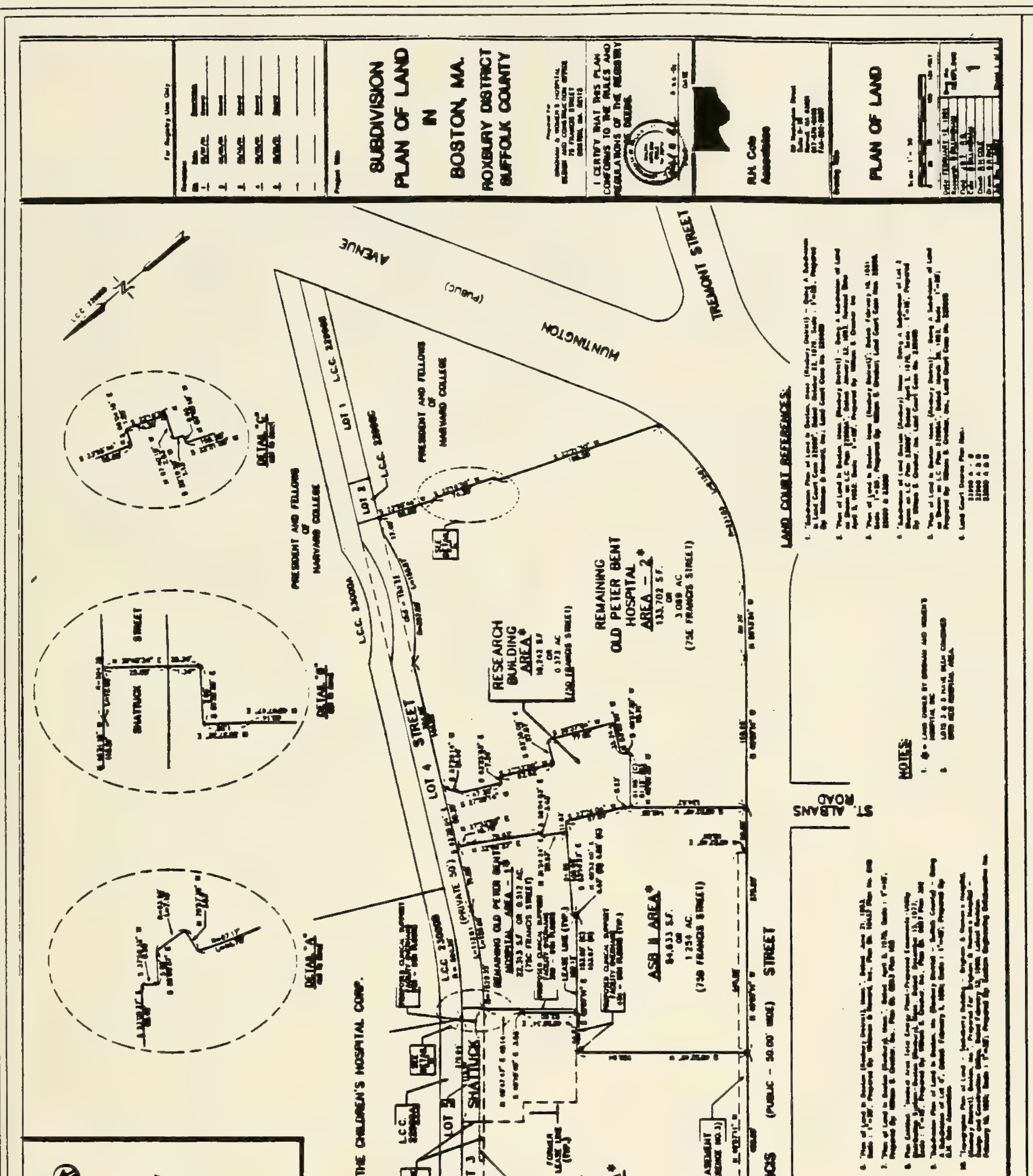

SUBDIVISION PLAN OF LAND IN BOSTON, MA.
ROXBURY DISTRICT SUFFOLK COUNTY
I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY
RJH Code Associates
PLAN OF LAND
HUNTINGTON AVENUE (PUBLIC)
TREMONT STREET
PRESIDENT AND FELLOWS OF HARVARD COLLEGE
LOT 1
LOT 2
LOT 3
LOT 4
L.C.C.
REMAINING OLD PETER BENT HOSPITAL AREA - 2
RESEARCH BUILDING AREA
ASB II AREA
NEW HOSPITAL AREA
(75A FRANCIS STREET)
THE CHILDREN'S HOSPITAL CORP.
DANA FARBER CANCER INSTITUTE INC.
SHATTUCK STREET (PRIVATE 50)
BLACKFAN STREET (PRIVATE - 50.00' WIDE)
BINNEY STREET (PUBLIC - 60.00' WIDE)
FRANCIS STREET (PUBLIC - 50.00' WIDE)
VINING STREET
ST. ALBANS ROAD
SURFACE EASEMENT
DETAIL "A"
DETAIL "B"
DETAIL "C"
LAND COURT REFERENCES
PLAN REFERENCES
NOTES
LOCUS
LOCUS MAP
SCALE: 1" = 200'
hm

FIGURE II-1
SUBDIVISION PLAN OF LAND
BRIGHAM & WOMEN'S HOSPITAL SHEET I

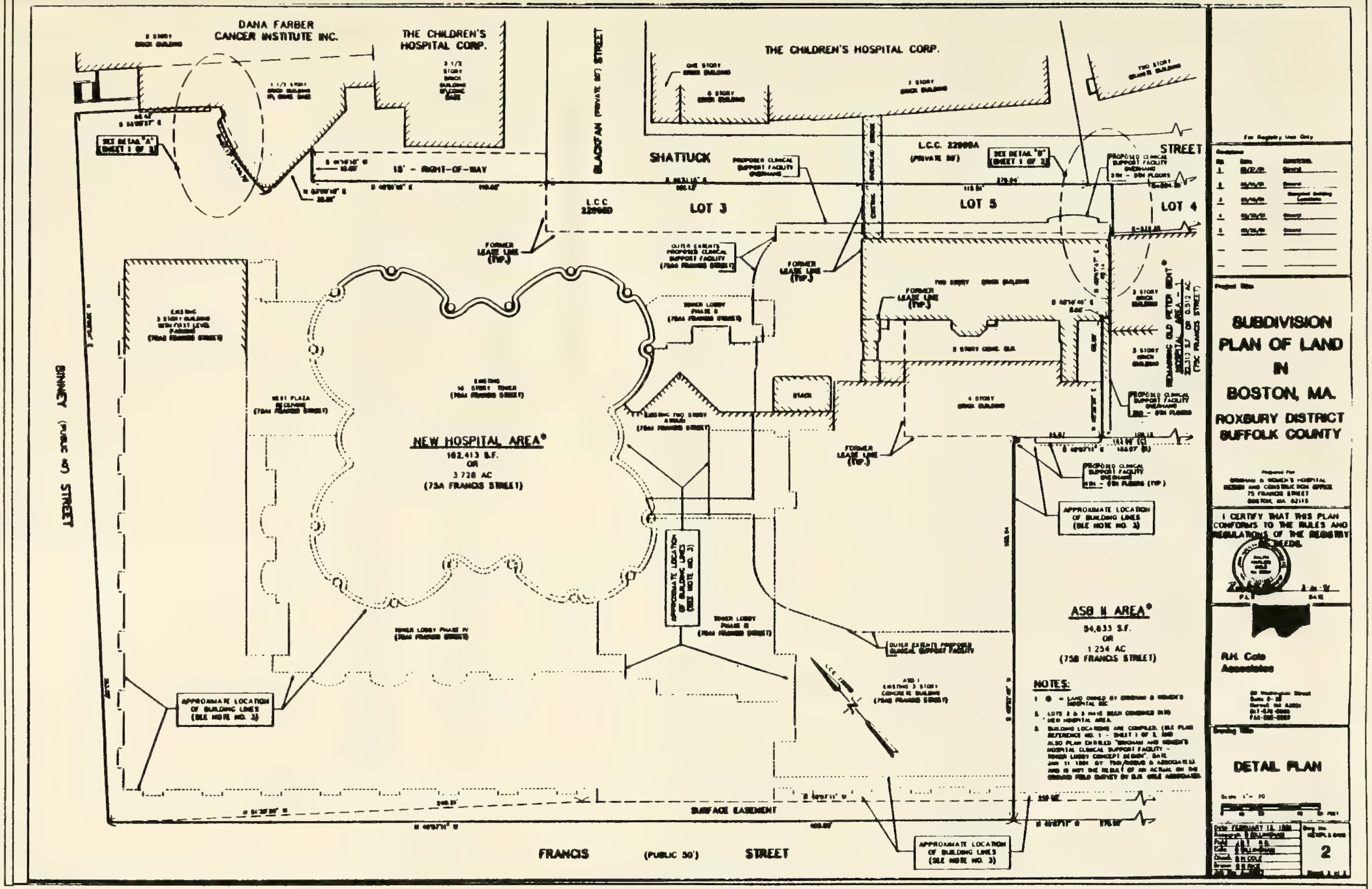

DANA FARBER CANCER INSTITUTE INC.
THE CHILDREN'S HOSPITAL CORP.
THE CHILDREN'S HOSPITAL CORP.
BLACKFAN (PRIVATE 50') STREET
SHATTUCK
STREET
L.C.C. 22099A
(PRIVATE 50')
18' - RIGHT-OF-WAY
L.C.C. 22099D
LOT 3
LOT 5
LOT 4
SEE DETAIL "A" (SHEET 1 OF 3)
SEE DETAIL "B" (SHEET 1 OF 3)
FORMER LEASE LINE (TYP.)
NEW HOSPITAL AREA*
102,413 S.F.
OR
3.728 AC
(75A FRANCIS STREET)
ASB II AREA*
54,833 S.F.
OR
1.254 AC
(75B FRANCIS STREET)
APPROXIMATE LOCATION OF BUILDING LINES (SEE NOTE NO. 3)
SURFACE EASEMENT
BINNEY (PUBLIC 40') STREET
FRANCIS (PUBLIC 50') STREET
NOTES:
SUBDIVISION PLAN OF LAND IN BOSTON, MA.
ROXBURY DISTRICT
SUFFOLK COUNTY
I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS.
R.H. Cole Associates
DETAIL PLAN
2

FIGURE II-2
SUBDIVISION PLAN OF LAND
BRIGHAM & WOMEN'S HOSPITAL SHEET II

6) Additional Relief for Parking within a Restricted Parking Overlay District
7) Ancillary Uses

On May 21, 1991 the Board of Appeal voted to grant Brigham and Women's Hospital and Children's Hospital exceptions from the Boston Zoning Code as required to allow for the construction of the Project, including the construction of the replacement of the present bridge crossing Shattuck Street to Children's Hospital (both facilities being located within a Planned Development Area).

Brigham & Women's Hospital has obtained the BRA's approval of the Development Impact Project Plan, and the Boston Residents Construction Employment Plan under Articles 26A and 26B of the Zoning Code. Brigham and Women's has filed disclosures of Beneficial Interest in accordance with Article 31A of the Zoning Code.

5.2 Anticipated Permits

City, State or Federal Agencies from which other non-zoning permits or other actions have been or may be sought are described below.

(Please note that each permit listed will be filed unless further analysis shows that such permit or action is not required. Additional permits may be needed as the building design proceeds further.)

Permit or Action Required

a) Boston Earth Removal Permit
b) BTD/Boston Street Opening and Construction Permits
c) Boston Utility Hookup Permits from BWSC, and Board of Health, and Gas Inspector Permit for Gas Piping
d) BWSC Permit for Discharge of Water During Construction

e) ISD/Demolition, Building, and Occupancy Permits
f) Building Code Variances
g) Garage Permit for Ambulance Area
h) BFD Permit to Install Storage Tank
i) ISD Approval of Fire Safety Equipment
j) BFD Permit for Maintenance of Fire Protection Equipment
k) BFD Permit for Safe Access to Site
l) BFD Permit for Welding and Cutting Equipment
m) Boston Air Pollution Control Commission - Compliance with Construction Noise Restrictions
n) BFD Blasting Permit
o) ISD Demolition Debris Disposal
p) BFD Permit for Removal of Existing Underground Storage Tanks
q) DWPC Sewer Extension and Connection Permit
r) MWRA Industrial User Discharge Permit or Waiver
s) DEP Cross-Connection Permit and Backflow Prevention
t) DEP Notice of Demolition, Construction and Asbestos Removal
u) DPS Elevator Certificates
v) DPH Determination of Need
w) DPH Health Facility Plan Review
x) MHC Notification
y) MDPS/Registration of Underground Storage Tank

5.3 Massachusetts Environmental Policy Act Review

An Environmental Notification Form was filed December 15, 1989, with EOEA. A Certificate of the Secretary of EOEA dated January 25, 1990, was issued indicating that no Environmental Impact Report was required. A Notice of Project Change dated May 10, 1990, was filed with EOEA. The Assistant Secretary determined on July 23, 1990 that the project change did not significantly increase the environmental consequences of the

Project and no further environmental review was required. A revised Notice of Project Change outlining an increase in gross floor area was filed with EOEA on February 15, 1991. EOEA has determined that no environmental impact report is required. Copies of the foregoing are attached as appendices.

6.0 COMMUNITY GROUPS

Brigham and Women's Hospital has affirmed its commitment to an open and cooperative process in working with abutters, community groups, and public agencies in the review of its proposed master plan and Clinical Support Facility.

The Hospital has worked closely with the Boston Redevelopment Authority and Mayor's Office of Neighborhood Services to provide information about the Clinical Support Facility, and all attendant benefits and potential impacts to concerned local neighborhood groups.

6.1 Interested Parties

Mission Hill Planning and Zoning Advisory Committee (PZAC)

Community Review of the Clinical Support Facility began in 1988 when the Hospital presented its Master Plan, prior to the formation of the Mission Hill PZAC. Once the PZAC was formed, representatives of the Hospital met with its members on several occasions to present the Master Plan, review plans for the Clinical Support Facility, and discuss community benefits. To aid the community's review the Hospital provided PZAC member's with summary information on the project and proposed public benefits.

The PZAC was helpful in communicating the community's priorities in formulating a benefits plan. PZAC members also discussed the community's issues of concern, to which the Hospital responded in writing to the Boston Redevelopment Authority.

Abutters

As an active member of the Longwood Medical Area Services Corporation (MASCO), the Hospital has a policy of open and frequent dialogue with its institutional neighbors.

Representatives of the Hospital have met with representatives from Childrens Hospital, Dana Farber Clinic, and Harvard Medical School in addition to other MASCO members institutions, to review project plans and address their questions.

6.2 List of Meetings

Hospital representatives met with the Mission Hill PZAC on November 30, 1988 and on June 20, July 18, and September 19, 1990.

6.3 Displacees

The Clinical Support Facility will not result in any displaced businesses or residents.

7.0 PUBLIC BENEFITS

7.1 Affordable Housing Contributions

Mission Hill contains approximately 7,504 units of housing, including 1,288 assisted units (Public Facilities Department, 1988). Increased investment in the neighborhood's public and private housing stock is a neighborhood priority, and residents are working closely with city planners to pursue this critical objective.

As a longstanding community member with many employees who are Mission Hill residents, BWH is both aware of the neighborhood's housing needs, and is acting to help meet these needs.

7.1.1 BWH Properties Donated for Housing

The Hospital donated three 3-family homes to the Restoration Housing Corporation to be rented as affordable housing. Residents now occupy these houses, which are managed by Roxbury Tenants of Harvard.

The Hospital has been working closely with the Mission Hill Planning commission and Mission Hill Neighborhood Housing Services to redevelop the Hospital-owned property at 706 Huntington Avenue. The property was donated by the Hospital to Mission Hill Neighborhood Housing Services and renovated into 37 units of affordable rental housing and two community retail stores.

7.1.2 Housing Creation Funds

BWH was the first Longwood Medical Area institution to agree to a single 100,000 square foot deduction for the purposes of calculating its linkage obligation. Calculating the linkage payment in this way will generate an additional $500,000 in linkage funds for affordable housing.

The Hospital agrees to pay housing linkage on all square footage of the clinical Support Facility, without any exception for the first 100,000 square feet. The anticipated amount of housing linkage generated by the Clinical Support Facility is estimated at $1.1 million.

7.2 Employment and Employment Training

With approximately 7,283 employees (May 1990), Brigham and Women's Hospital participates in numerous recruitment and training initiatives that provide a wide range of employment opportunities for Boston residents and minority individuals. Approximately 42% of BWH employees are Boston residents, and nearly 30% of all employees are individuals of color.

BWH continually stresses its role as a major employer and supporter of Affirmative Action hiring programs by participating in state, local, and private programs that make a variety of job opportunities available to an expanded group of individuals. BWH participates in more than thirty publicly and privately sponsored programs designed to make employment training and career opportunities more accessible to Boston residents, youths, veterans, the physically-challenged, public housing tenants, and minority individuals, among others.

BWH has directed full-time personnel to represent the Hospital in many training projects that prepare disadvantaged, minority, and other community residents to enter or re-enter the workplace, through summer employment, internships, and full-time employment. To maintain these efforts, and ensure that community-based employment programs are kept informed about opportunities at BWH, the Hospital distributes a weekly listing of job opportunities to 124 public and private programs to ensure that those groups are kept informed about opportunities at BWH.

7.2.1 Youth Employment

The Hospital will continue to work with the Private Industry Council (PIC) to recruit Mission Hill youths for summer jobs, school year positions and career training programs. Currently the Hospital works, through the PIC, in cooperation with the following schools: Jamaica Plain High (formerly English High), Latin Academy, Madison Park High, Humphrey Center, Dorchester High, English High, Boston Tech, Boston Latin, Mario Umana Tech, Copley Square High, and West Roxbury High.

7.2.2 Construction Jobs

The Hospital will comply with the Boston Residency Jobs Policy (50-25-10) Agreement targeting construction jobs to Boston residents, minorities, and women, and within the jobs policy will seek to hire qualified Mission Hill residents in each target category. It is estimated that the Clinical Support Facility will generate construction jobs for approximately 330 person years of work.

7.2.3 Permanent Jobs

The CSF will generate approximately 228 new full time permanent employment opportunities. The Hospital will formulate an Employment Opportunity Plan providing for BWH's good faith efforts to achieve a goal that 50% of new permanent employment opportunities created by the CSF will be made available to residents of Boston.

7.2.4 Training Center

The Hospital agrees to pay housing linkage on all square footage of the CSF, without any exception of the first 100,000 square feet. Calculating the linkage payment in this way will generate an additional $100,000 in linkage funds for job training. The Clinical Support Facility will generate an estimated $218,900 in job training linkage funds. BWH will work with the EDIC/OJCS and the Mission Hill community to target linkage funds to benefit the Mission Hill neighborhood and other City of Boston residents. Areas under consideration for application of the linkage funds include contributing to the establishment of an employment and training center for health care professions; entry level job opportunities with advancement potential for job-ready homeless heads of households and unemployed Mission Hill residents; and Midwifery programs and other training programs designed to contribute to community health care needs.

7.2.5 Employment Outreach to Mission Hill Residents

The Hospital participates in more than 30 state and local employment and training programs, including the annual job fair in the Mission Hill community to recruit and inform residents about employment and training opportunities available through the Hospital.

The Hospital works with the Boston Public Schools to initiate health career days at Mission Hill schools, to teach students about health career opportunities and promote interest in studying the sciences.

7.2.6 List of Examples of Employment and Training Initiatives in Which BWH is Actively Involved

- Bridge Over Troubled Waters

  Troubled youngsters from their Youth Services Program, many from shelters, foster homes and run-a-ways have been placed in various positions within the Hospital.

- ADAPT, Roxbury

  A program that takes community residents and trains them to enter or re-enter the workplace. BWH has visited them and spoken with their clients about health care careers and employment opportunities at the Hospital.

- Children's Hospital Development Evaluation Clinic

  BWH has hired and worked closely with staff from the clinic to place individuals who are developmentally handicapped.

- Bay State Skills Corp.

  Staff members act as consultants to the secretarial/clerical training program which takes individuals receiving public assistance and trains them to enter/re-enter the workforce.

- E.T. Dimock Vocational Training Center

  BWH has hired at least 50 individuals from the Governor's Employment and Training Program. These are individuals who formerly received public assistance. They have gone through training programs at the Dimock Vocational Training Center and have been placed in permanent positions here. BWH has also assisted in Dimock's recruitment efforts for the Central Processing Technical training program by placing newspaper ads and printing posters.

Ruby Sampson, a Surgical Technician on BWH's staff and a graduate of Dimock toured nationally with the governor to promote the ET Program.

- Morgan Memorial Goodwill Industries

  This is a non-profit agency working with emotionally and physically disabled individuals providing training and a wide variety of other services. A staff member serves as a member of the Lotus 1-2-3 Employee Advisory Committee giving advice on curriculum, financial concerns and employment opportunities. BWH is currently working with them to develop an internship program allowing individuals to work and train on the job for a 6 week period and to help them develop a support-work program which eases individuals back into the workforce.

- Boston Housing Authority

  The Hospital received an Appreciation Award for actively participating and supporting their Supported Work Program.

  The Supported Work Program allows individuals on public assistance a chance to ease into the workplace with on-the-job training. BWH currently has individuals in a variety of clerical and technical entry-level positions. One individual has been promoted into a supervisory position.

- Boston Technical Center

  This program trains Boston residents for secretarial positions. BWH has worked closely with them helping them to select students, providing their students with classes on interviewing skills and placing their graduates within the Hospital.

- Perkins School for the Blind/Massachusetts Commission for the Deaf and Hard of Hearing

  At least 5 individuals who were referred from both the School and the Massachusetts Commission for the Deaf and Hard of Hearing have been hired.

- Black Achievers Program

  One of BWH's recruiters, a Black Achiever, has visited 4 elementary and junior high schools speaking on Health Careers and Black History.

- Veterans Clearinghouse

  In conjunction with the Black Achievers, 10 Veterans were hired into BWH's Housekeeping Department. BWH provided them with additional orientation and training in the housekeeping area while they continued their counseling.

- Massachusetts Project with Industry

  This is an organization which works with physically handicapped individuals by placing them in meaningful jobs from entry level to professional positions. As a member of their Employment Advisory Board, a BWH staff member provides them with advice and attends their job fairs.

- Back to Work Program

  The Hospital developed and implemented a program to take community residents and provide them with secretarial training (at no cost to the individual) and placed these individuals in positions within the Hospital.

- O.I.C. (Opportunities Industrial Center)

  O.I.C. offers training to community residents in the areas of secretarial/clerical and data entry skills. BWH has successfully placed many of their participants who are predominately Hispanic and Haitian community members.

- B.E.R.C. (Boston Employment Resource Center)

  This agency places individuals who are being eased from the penal system back into society. BWH has also worked with their Division of Youth Services component and have been successful in placing many of their referrals.

- ABCD Parker Hill/Fenway

  A BWH-sponsored recruiter serves on ABCD's Advisory Board which deals with the overall management of the center. This recruiter has given workshops on interviewing skills (mock interviews) and resume writing and served on a selection committee which chose a committee member to be on Project Life, a community based infant mortality intervention program.

- College Fairs

  BWH has attended the following fairs:

  - Roxbury Community College
  - Simmons
  - U.Mass/Boston
  - Bunker Hill
  - Emmanuel
  - Boston University
  - Boston College
  - Northeastern
  - Laboure Jr. College
  - Fisher Jr. College

- Boston Housing Authority-Tenants Task Forces

  BWH has attended job fairs and hired tenants from the following housing projects:

  - Whittier Street
  - Franklin Field
  - Fidelis Way
  - Mission Main
  - Mission Hill

- Compass

  Compass is an alternative High School Program dealing with emotionally troubled youth, preparing them to return to their former high school. BWH has visited the school and given employment advice as well as taken some of their students on a tour of the Hospital. Several participants of the program have been hired.

- Chinatown Occupational Training Center

  Members of the Asian community have been placed in jobs within the Hospital.

- Cardinal Cushing Center

  This program trains members of Boston's Hispanic Community in secretarial/clerical and nursing assistance programs. BWH has successfully placed graduates in jobs within the Hospital.

- Division of Employment Security (DES)

  BWH works with a variety of neighborhood offices and has successfully employed many of the individuals DES refers to the Hospital.

- NAACP

  BWH has participated in many of NAACP's job fairs including assisting them with the organization of the fairs and providing interviewing skills workshops. The Hospital has placed many of the referrals from the NAACP.

- Clergy

  BWH has worked from Boston neighborhood churches, employing individuals referred to us.

- Boston Schools

  The Hospital works predominantly with schools in its neighborhood i.e., Madison Park High, Humphrey Center, Dorchester High, English High, Latin Academy, Boston Latin, Mario Umana Tech, Copley Square High, Boston Tech, Jamaica Plain High, West Roxbury High.

  BWH has visited some of these schools to talk about employment and health care careers as well as had students come and tour our facility. The Hospital keeps in touch with Guidance Counselors and PIC Coordinators at these schools.

- Massachusetts Rehabilitation Commission

  BWH has worked with the Massachusetts Rehabilitation Commission to refer individuals for services and placed some of their participants.

- Community Lunch and Dinners

  The Hospital hosted 3 lunches and dinners, gathering representatives from community agencies and the clergy to discuss employment, education and training opportunities. This has provided all with a forum to share ideas and information.

- Open House

  Boston residents were invited to the Hospital's open house to explore the varied employment opportunities available at BWH. The Hospital was able to employ many Boston residents as a result of the Open House.

- Health Career Fair/School Career Fair

  BWH coordinated the 23 Health Career booths that exhibited at the March 1, 1988 School Career Fair. This was a city-wide effort that gave Boston High School students a chance to see, learn about and talk with health care professionals. This was a first of its kind city-wide event.

- Humphrey Center Advisory Boards

  Hospital staff serve on both the Medical Secretary and Medical Assistants Advisory Boards, offering advice on curriculum development, and employment opportunities.

- Opportunities in Boston

  Associated with the Boston Compact and Boston Works, the Hospital offers advice and provides information regarding employment and opportunities for minorities in Boston.

- Summer Jobs Program

  During the summer, BWH offers meaningful employment to approximately 20 students and a series of workshops which attempt to help the students adjust more easily to the working world.

- YWCA

  A BWH Employment Manager serves on YWCA's Employment and Training Advisory Board giving advice on curriculum, job fairs, internships, training, and other related issues. The Hospital has placed individuals referred from YWCA.

- Boston Compact

  The Hospital has made a commitment to the Compact both financially and in its hiring practices. It gave priority hiring to Boston residents, and supports the programs run by the Compact.

- Boston Works

  Currently BWH is working on an advisory board which is looking at curriculum changes to the Bunker Hill Community College's Radiology Technology Training Program. (Specifically, the Hospital is looking to train/upgrade its current employees.)

- Boston Public School System Externship Program

  This is a program designed for Boston teachers/counselors to learn first hand about careers. BWH had a math teacher from Boston Latin High School learn about healthcare careers by meeting and observing professionals at work. This teacher will bring this experience back to his classroom and share the information with other teachers/counselors and students.

- Boston for Boston

  A commitment was made to hire Boston residents for positions at BWH. Currently the Hospital is originating two neighborhood recruitment drives where we will visit the Roxbury and South Boston Communities to interview candidates in their neighborhood for positions at BWH.

- Health Career Committee-Humphrey Center

  The Hospital started, in collaboration with Jim Carodonia, Director of Vocational Education for the City of Boston, an ongoing committee composed of Boston School counselors, teachers and representatives from local Hospitals to address the issue of how to interest young people in health care careers. This group was a sponsor of the recently held Health Career Expo held for students from Boston. Other projects are being explored by the committee such as a plan to "buddy-up" each Junior High School and High School in Boston with a particular Hospital so that students can learn first hand about health careers by talking with and observing health care personnel while they work.

- Job List

  Every week BWH's job list is sent to 124 community agencies.

- Emmanuel College Advisory Board

  A staff member is on the career advisory board at Emmanuel College. This group advises the college and students about various careers which are available to their graduates and also keeps the college current with what is happening in the field of job placement. Activities BWH has assisted the college in include participating in a Career Fair, helping Emmanuel to establish a Human Resources Curriculum and placing students in internship and permanent positions within the Hospital.

7.3 Other Public Benefits

7.3.1 Day Care

BWH agrees to reserve a number of day care slots it leases for employees who are Mission Hill residents earning less than $30,000 per year. The percentage of total slots so reserved will be the same as the percentage of all employees who are also Mission Hill residents earning less than $30,000 ("target percentage"). BWH agrees to offer any opening of an existing space to Mission Hill resident employees who earn less than $30,000 until the target percentage is reached among existing spaces, provided that the Hospital is not being requested to terminate the use of any space by a non-resident employee to fulfill the target percentage among existing spaces. This information will be available to the community on an annual basis, upon request.

7.3.2 Neighborhood Business Participation

BWH will advertise vendor contracts to neighborhood businesses from the Mission Hill community for commercial businesses initiated in the Hospital or on its campus, including but not limited to, the Hospital's flower shop, gift shop, or food vendors. The Hospital will provide notice to qualified neighborhood businesses when and if such opportunities become available.

7.3.3 Parking

BWH currently leases 50 parking spaces located at the Back Bay Manor housing complex on the southern side of Huntington Avenue designated for the LMRC. The BWH will relinquish the use of these spaces at the rate of 10 spaces per year for five years. If a member of the community wishes to lease a space at the Back Bay Manor Garage during this time, and one is not available, the Hospital will relinquish the additional space to allow the Mission Hill resident to lease it.

7.3.4 Community Health Care Services

BWH provides approximately $11 million in free health care services each year, more than any other private Hospital in the state. The vast majority of these health services go to Boston residents.

The Hospital also provides health care specifically targeted to the Mission Hill community:

- BWH supports two neighborhood health centers, the Brookside Neighborhood Health Center and the Southern Jamaica Plain Health Center. Both centers are licensed through BWH and receive operating support.

- In 1976, BWH provided $100,000 in start-up for the Family Health Practice in Mission Hill. This money was used to purchase materials and supplies and subsidize staff salaries.

- BWH provides free flue vaccines for many Mission Hill residents, including seniors, chronically ill residents, and residents of the Mission Park complex operated by Roxbury Tenants of Harvard (RTH). Last winter over 75 flu shots were administered.

- BWH provides a nurse practitioner to make visits to the Mission Park housing complex, and the "Back of the Hill" development along South Huntington Avenue.

- For the past eight years BWH has operated the free schools health service at Mission Church High School. This is a comprehensive school health program which includes one on-site nurse practitioner once a week, as well as health education presentations.

- Working in conjunction with Roxbury Tenants of Harvard, BWH recently established an Alcoholics Anonymous group for Mission Hill residents.

7.3.5 Mission Hill "Good Neighbor" Programs

BWH takes seriously its membership in the Mission Hill community. In addition to free health services, BWH provides and participates in other neighborhood-based programs designed to help those in need.

- Longwood Area/Mission Hill Food Project

  In 1984, BWH founded the Longwood Area/Mission Hill Food Project to address the need of emergency food supplies in the Mission Hill and Fenway neighborhoods. The Project is a consortium of area institutions, including all MASCO institutions and eighteen community groups. Last year alone the Project collected over two tons of canned goods and cash contributions for neighborhood residents in need.

- Senior Discount Meals

  Seniors are an important component of the Mission Hill community. BWH recognizes the special needs of this group of residents, and responds by providing health care and other assistance. For the past 4 years the Hospital has operated a discount meals program for seniors. Under this program, area seniors can purchase a complete meal for a reduced price.

- Community Outreach

  BWH continues to reach out to Mission Hill residents with information about health care services, employment opportunities, and other Hospital news listed in "Community Report", a monthly newsletter provided to 6,000 households in the Mission Hill neighborhood.

  On a regular basis, Hospital representatives host community members at receptions and dinners, to update associations and individuals about the Hospital's activities and to keep abreast of neighborhood concerns. Recent community participants include:

- Opportunities Industrial Center
- Morgan Memorial Goodwill Industries
- Massachusetts Rehabilitation Commission
- Children's Hospital Developmental Evaluation Clinic
- Commonwealth Housing Development
- Mission Church
- Roxbury Tenants of Harvard
- Boston Employment Resources Center
- Fisher Junior College
- Dimock Vocational Training Center
- West Roxbury High School
- Mattahunt Community School
- Bay State Skills Corporation
- Veterans Clearing House
- Job Placement Center
- Division of Employment Security
- Massachusetts Project with Industry
- Representative Kevin Fitzgerald
- Roxbury Community College
- Governor's Office of Human Resources
- Humphrey Center
- Boston Technical High School
- Department of Public Welfare
- Displace Homemakers
- Hattie B. Dudley Community Center
- ADAPT, Inc.

III. ENVIRONMENTAL PROTECTION COMPONENT

III. ENVIRONMENTAL PROTECTION COMPONENT

1.0 WIND QUALITATIVE ASSESSMENT

1.1 Introduction

A qualitative assessment of pedestrian level winds was conducted by Frank H. Durgin, P.E. and HMM Associates, Inc., for the proposed Brigham and Women's Clinical Support Facility site. The assessment considered existing conditions and the potential effect of the Clinical Support Facility Building. The evaluation was based on:

- Observations made during two site visits. The first on December 9, 1990 and a second on December 10, 1990 during an episode of strong northwest winds;
- Drawings of the proposed Clinical Support Facility provided by the project architects, Tsoi/Kobus & Associates;
- Photographs of a model of the proposed project taken December 7, 1990 and of the existing site taken on December 9, 1990;
- A topographic plan of the project site;
- A review of the Boston wind climate; and
- An evaluation of pedestrian level winds at the project site in its urban context utilizing Frank Durgin's 21 years of experience in dealing with pedestrian level winds.

1.2 Clinical Support Facility and Its Surroundings

1.2.1 Description of the Project

The proposed Clinical Support Facility Building will occupy the area now occupied by the Tackaberry Building, a remaining part of the original Peter Bent Brigham Hospital on Shattuck Street and some of what is now an ambulance receiving area to the northwest of the Tackaberry Building. The site is across the street from a 7-story Children's Hospital Building and just southeast of the 16-story Patient Tower Building of Brigham and Women's Hospital (BWH). The proposed building will be just to the northwest of the 4-story Amphitheater and 3-story Ambulatory Services Building (see Figure III-1).

The new building will be about 165 feet in height and rise the full height directly from Shattuck Street. The ground floor will contain an enclosed ambulance court area with eight bays for the ambulances and two entrances directly from Shattuck Street. The Clinical Support Facility will be continuous with the Amphitheater along Shattuck Street to the southeast of BWH's Patient Tower.

1.2.2 The Area Surrounding the Site

The buildings immediately surrounding the site range from 2 to 16 stories (see Figure III-1). BWH's Patient Tower (16 stories) and the MATEP power plant facility (4 stories) lie to the northwest on the same side of Shattuck Street. To the north there is a 7-story building (Jimmy Fund Building) that is part of the Dana Farber Cancer Institute and beyond that diagonally across Binney Street is the main 15-story Dana Farber Building. A 7-story Children's Hospital Building lies directly across Shattuck Street to the northeast. Beyond that are other 8- and 10-story buildings. Another 3-story Children's Hospital Building lies due east of the site and again there are 8- and 10-story buildings beyond that to the east. The 4-story BWH Amphitheater and 3-story Ambulatory Services Building are sited to the southeast along Shattuck Street. Further east lies BWH's 16-story Thorn Building. To the south, southwest, and west, there are between 100 and 200 linear feet of 2- and 3-story roofs, and beyond that, across Francis Street, 2- and 3-story wood frame houses. The ground level, which is flat for most directions, drops off to the west and southwest and rises somewhat to the south.

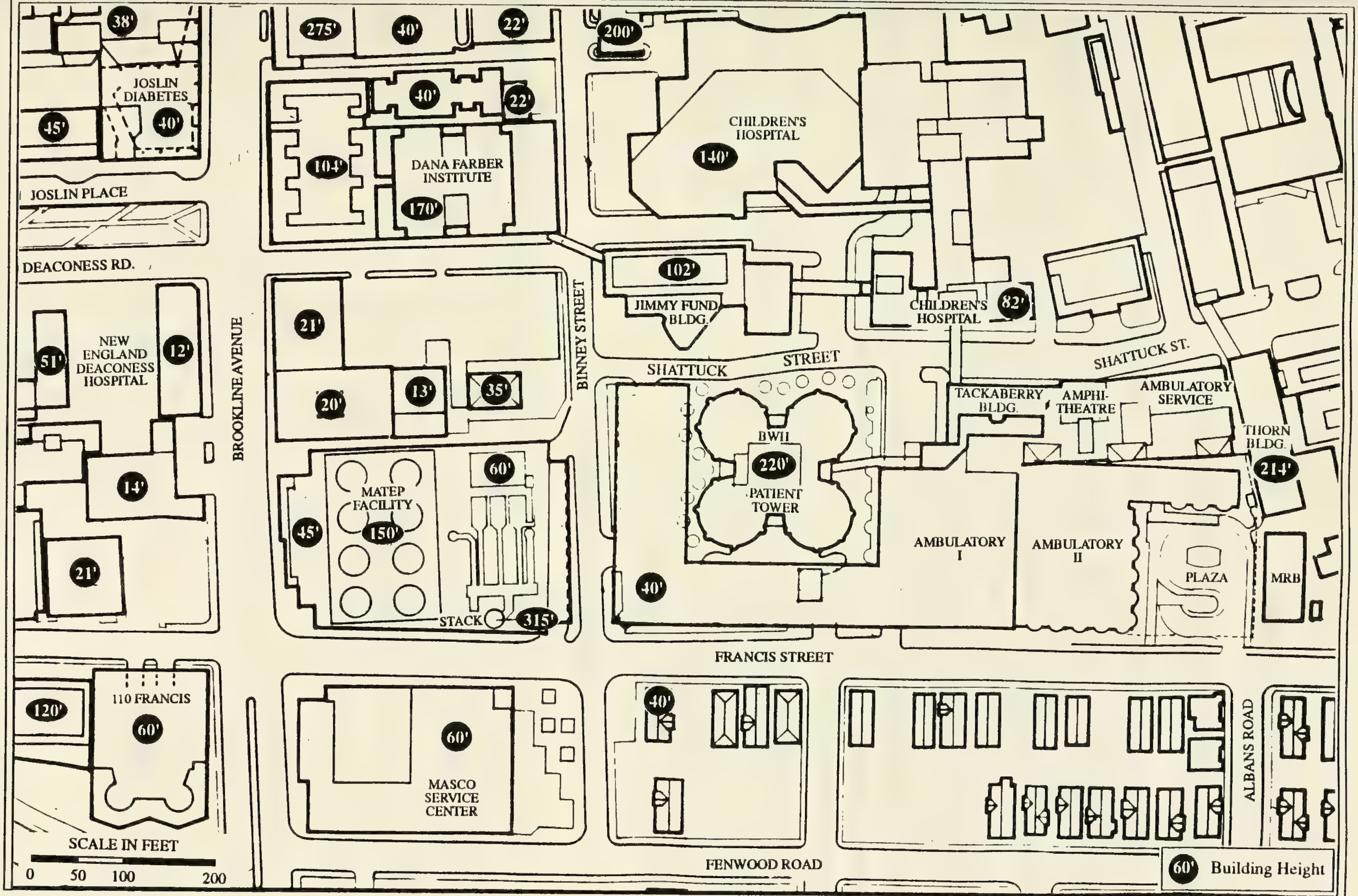


FIGURE III-1
PROJECT AREA SHOWING BUILDING HEIGHTS AND NAMES

1.3 The Wind Climate in Boston

1.3.1 Variation of Average Velocity with Height

In general, the natural wind is unsteady (i.e., gusty) and its average velocity increases with height above the ground. Figure III-2 depicts approximately how the average velocity varies with height for different types of surface features. When one puts up any building, the possibility exists that the building will bring the wind speeds at the top of the building down to ground level for certain wind directions. Since the wind speed increases with height, the taller the building, the stronger the winds that may occur at its base.

Figure III-3 illustrates typical wind interaction with a building. The conditions depicted primarily occur when a taller building is surrounded or adjacent to a shorter building. When there are a lot of buildings of similar height in an area, each building will tend to shelter another from the wind.

These effects were illustrated at the site when visited on December 10, 1990, with strong winds from the northwest. The BWH's Patient Tower is considerably taller than the MATEP power plant and windy conditions were experienced along Binney Street and along Shattuck Street. However, further southeast along Shattuck Street in front of the Thorn Building, there was much less wind.

1.3.2 Statistical Description of the Wind

Figure III-4 depicts a wind rose for the Boston area. As noted in the figure, the wind rose is based on surface wind data from Boston' Logan International Airport from 1945 to 1965. The total length of each of the lines radiating from the center of the figure is proportional to the time the wind comes from that direction. The length of each line from the center to the lines crossing the radial lines is proportional to the time the winds coming from that direction are less than 7.5, 12, and 19 mph; the outermost one being for all wind speeds.

The average wind speed measured at 58 feet at Logan Airport is 12.3 mph. At pedestrian level height (i.e., at 4.5 feet; chest height), it is about 8 mph.

Figure III-4 shows that the winds in the Boston area come from the northwest quadrant one-third of the time, from the southwest quadrant one-third of the time, and from the eastern half of the compass another third of the time. Not shown in the figure is

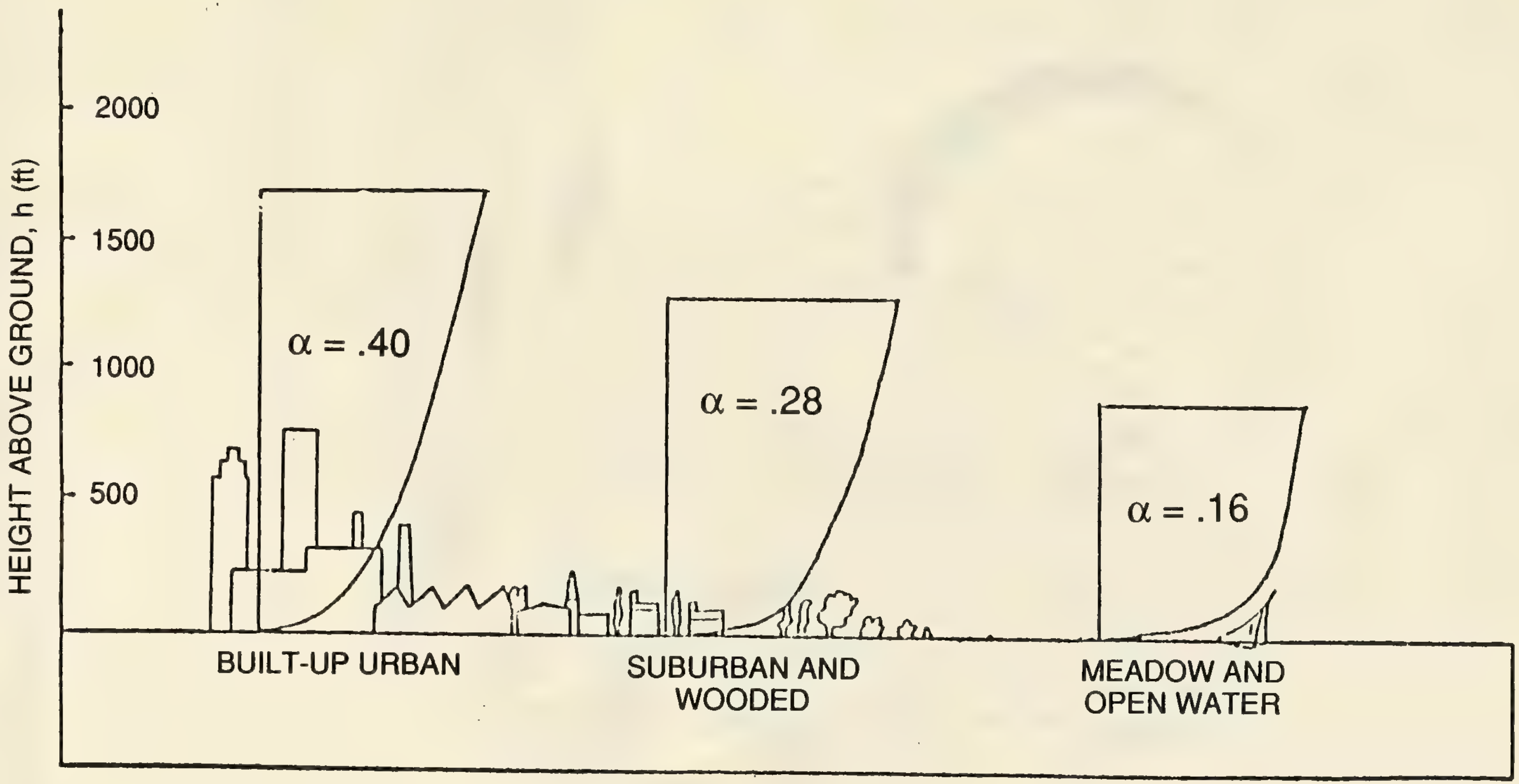
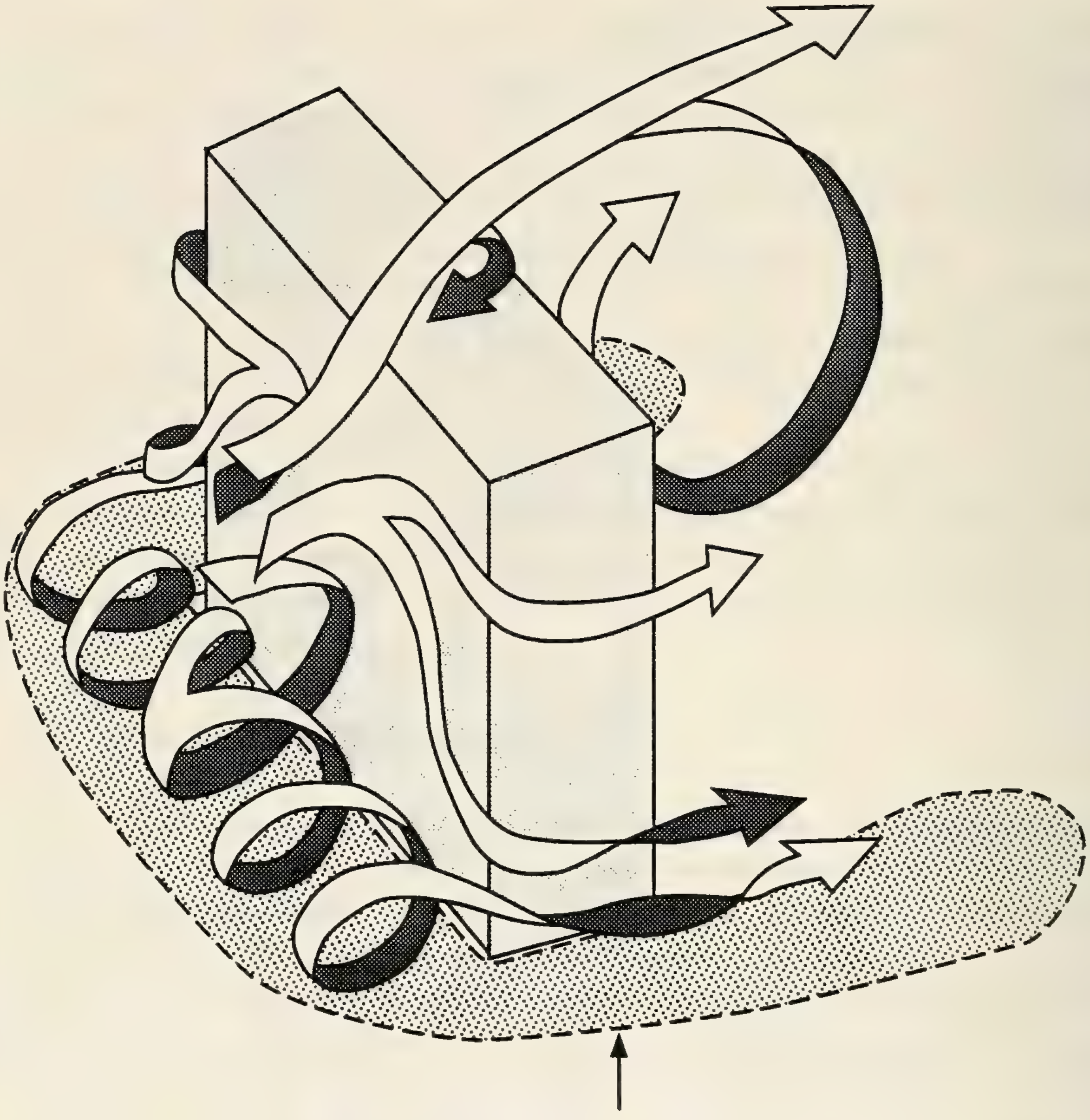


FIGURE III-2
TYPES OF EARTH'S BOUNDARY LAYER AFTER DAVENPORT



Source: Edward Arens & Jon Peterka, "Controlling the Wind Climate Around Buildings," Civil Engineering Practice, Spring, 1986.

3247

FIGURE III-3
THE FLOW FIELD AROUND A TALL BUILDING

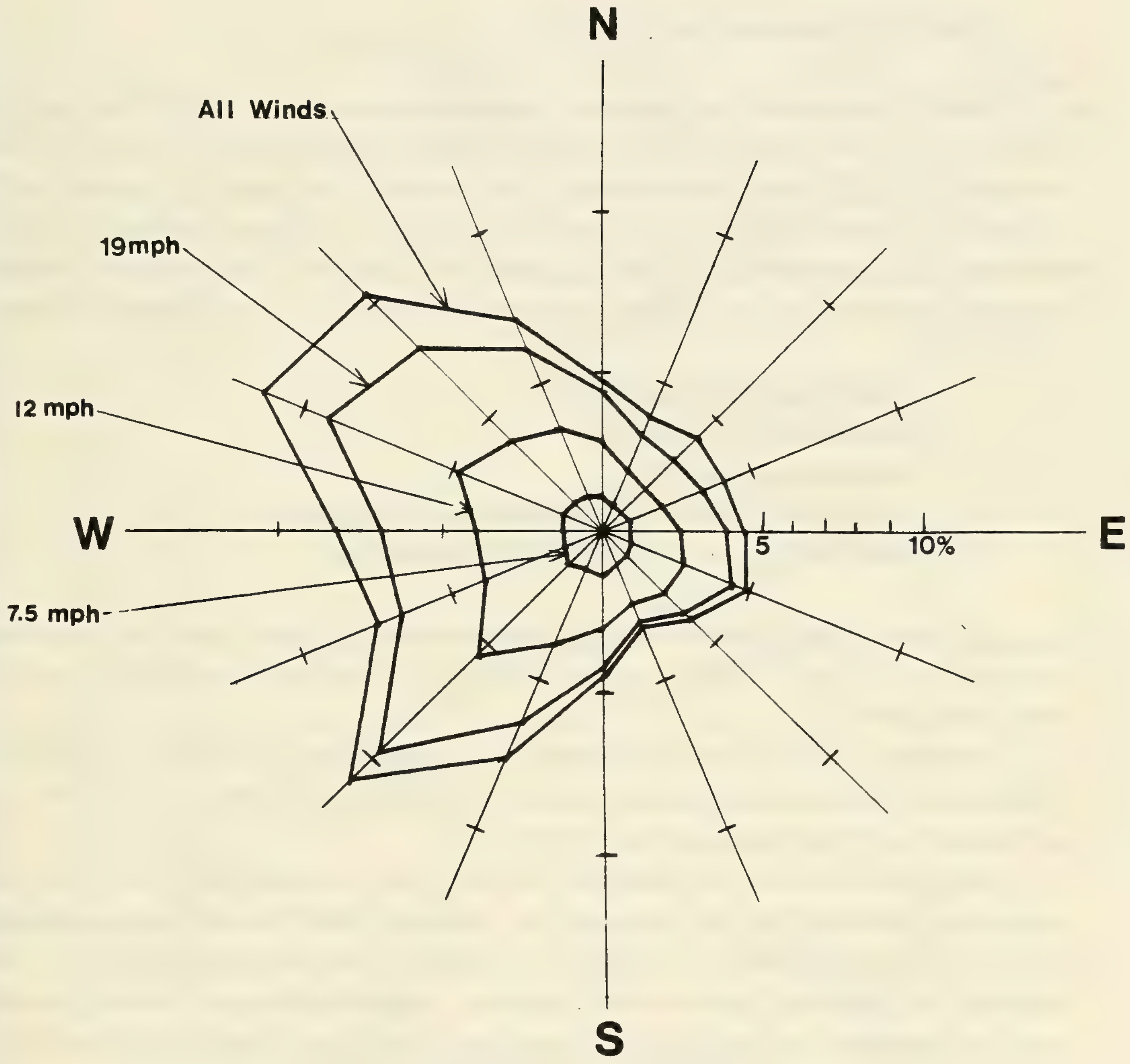


FIGURE III-4
BOSTON WIND ROSE FOR THE YEAR
(Surface data obtained from Logan International Airport 1945-1965)

the fact that northwest winds tend to occur more frequently in the winter and southwest winds more frequently in the summer. Easterly winds usually occur during storms when there is precipitation.

1.4 Criteria for Pedestrian Level Winds

In 1978, Melbourne[1] conducted a literature review to find a probablistic criteria for hourly average pedestrian level winds that would reflect different types of pedestrian level activities, as well as safety considerations. The results of that study are summarized in Figure III-5. The vertical scale in Figure III-5 is the hourly average wind speed in miles per hour and the horizontal scale is the probability of that wind speed actually occurring based on the number of hours between occurrences. Five comfort criteria levels are given:

1) Unacceptable and dangerous;
2) Uncomfortable for walking;
3) Acceptable for walking;
4) Acceptable for short periods of standing or sitting; and
5) Acceptable for long periods of standing or sitting.

Actual intervals of occurrence in terms of once per day, month, and year are shown at the top of the figure. These occurrences are based on average storm duration and are from Davenport[2].

Melbourne's criteria cover all probabilities as shown in Figure III-5. Considering winds with a 100-hour return period (one percent probability) occurrence, his criteria can be restated in tabular form, as follows in Table III-1.

Melbourne's criteria are subjective and expressed in probablistic form. They are defined in order that they can be used in the evaluation below to indicate approximately how windy a given location is now and the affect of the proposed building on that location. It is important to realize that categories suggested below are educated guesses, based on experience and not on wind tunnel tests. Where not specified, the location is expected to be in Melbourne Category 4 or 5 (as defined in Table III-1).

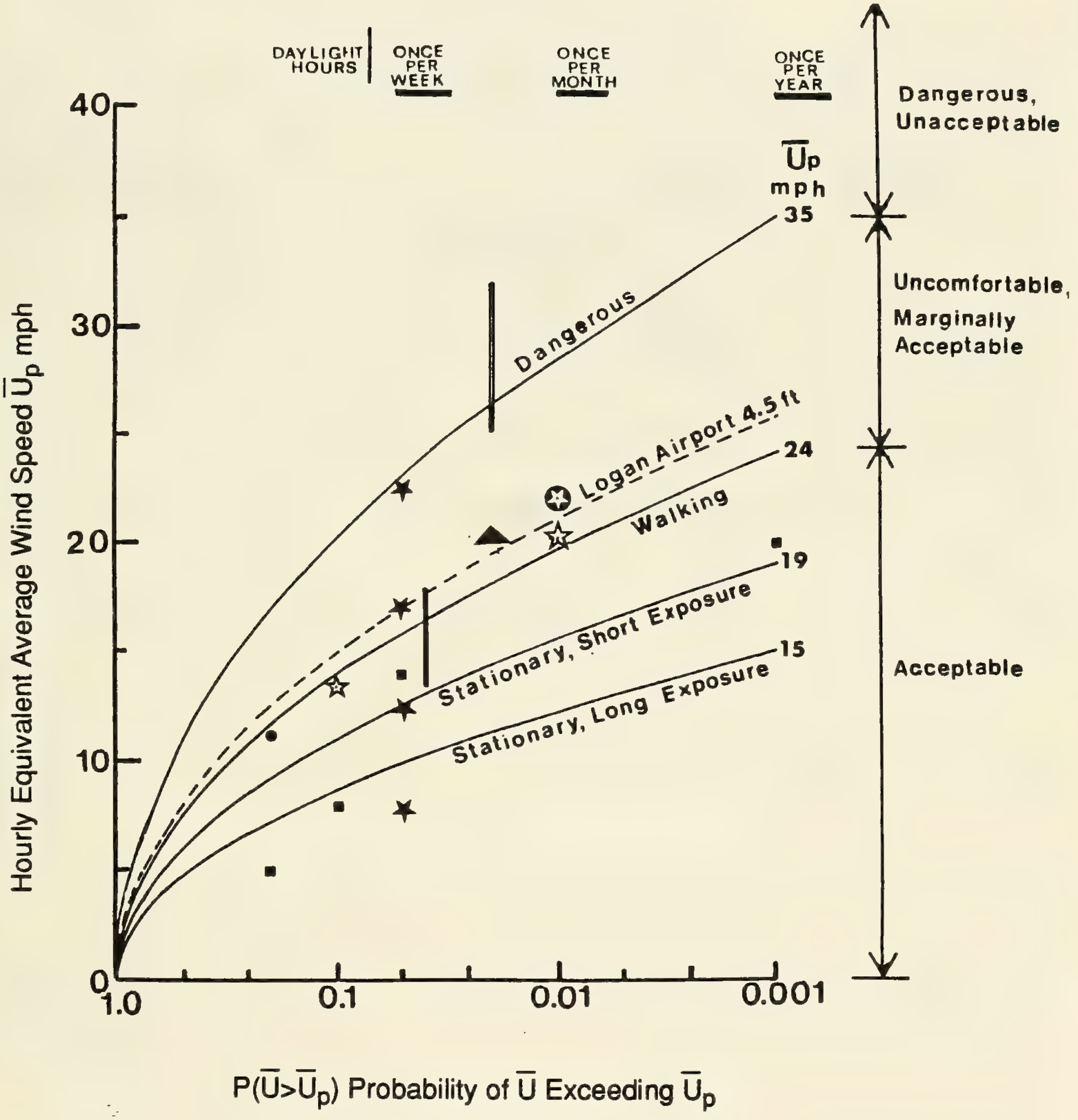


FIGURE III-5
PEDESTRIAN LEVEL WINDS
COMFORT CRITERIA LEVELS

TABLE III-1

MELBOURNE'S CRITERIA FOR 100-HOUR RETURN PERIOD PEDESTRIAN LEVEL WINDS

Category	Description	Average Wind Speed (mph)
1	Unacceptable and Dangerous	27 < Uav
2	Uncomfortable for Walking	19 < Uav < 27
3	Acceptable for Walking	15 < Uav < 19
4	Stationary Short Exposure	12 < Uav < 15
5	Stationary Long Exposure	Uav < 12

1.5 The Northwest (Winter) Winds

Existing Conditions

The northwest winter winds blow directly at the northwest face of BWH's Patient Tower and straight down Shattuck and Francis Streets (see Figure III-6). Except for its stack, the power plant, which is just upwind of the Patient Tower for northwest winds, is two to four stories higher than the low-rise building surrounding the Patient Tower, but is much lower than the Patient Tower. The northwest wind hits the tower and comes straight down the northwest facade through the gap between the tower and the low-rise, and into the parking area under the low-rise. The awning canopy at the northwest entrance to the tower was probably designed to protect people entering the tower from that down draft. Once in the parking area, some of the wind passes around the north and west corners of the tower making those areas windy, probably in Melbourne Category 2 or 3 (see Figure III-6). The rest of that wind goes through the parking area and out toward Binney Street. The wind is not very strong in the parking area, but becomes strong again as it passes through the narrower openings to Binney Street. Thus, as one walks along the sidewalk on Binney Street nearest the tower, one experiences a number of "squirts" of wind coming out of the openings to the parking area (Melbourne 3). Once out in Binney Street, these squirts of wind combine with a wind caused by the 15-story Dana Farber building to make a stronger wind blowing down Binney Street toward Francis Street on the sidewalk next to the MATEP power plant facility (Melbourne 2 or 3). For northwest winds, the areas described above are clearly the windiest places in the vicinity of Brigham and Women's Hospital.

Along Shattuck Street beside the Patient Tower, windiness still is noted (Melbourne 3 and 4), but beyond the tower, the winds due to these northwest winds are very modest, except under the Shattuck Street Bridge (to Children's Hospital) where the wind is a little stronger (Melbourne 3 and 4) than elsewhere. The Thorn Building Bridge crossing Shattuck Street appears to have almost no effect on the winds below it, probably due to its small size and great height.

Along Francis Street, the only place where northwest winds cause any significant windiness is at the corner of Binney and Francis Streets, and it is caused by the winds just described coming down Binney Street (Melbourne 3). The winds along Francis Street in all other areas were quite modest and there was little wind in the area of the main entrance to Brigham and Women's Hospital.

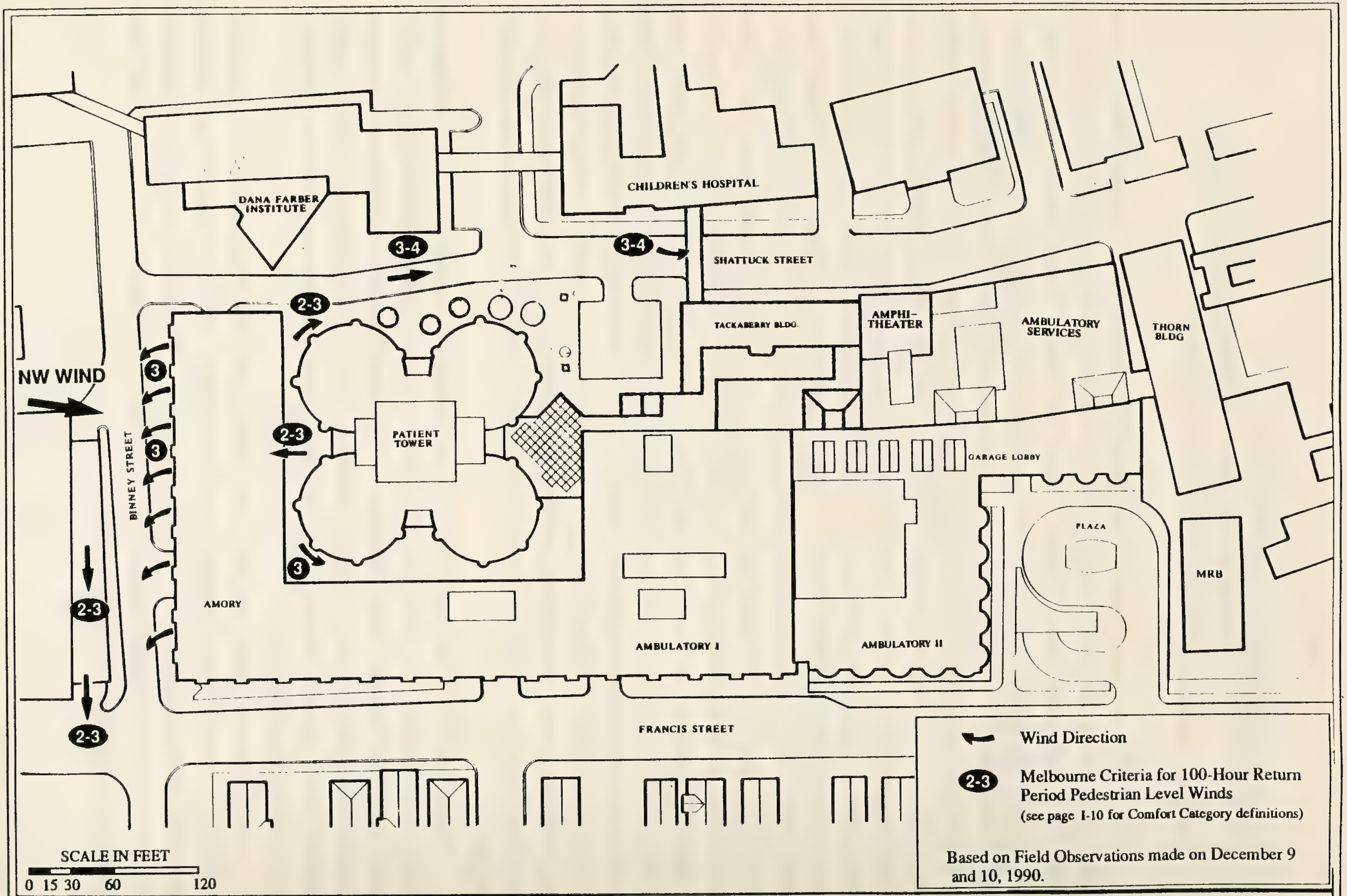


FIGURE III-6
NORTHWEST WINDS
EXISTING CONDITIONS

The above wind climate descriptions are based on site observations on December 10, 1990.

Impact of Clinical Support Facility on Northwest Winds

The addition of the Clinical Support Facility will have no effect on pedestrian level winds due to northwest winds in most of the areas described above (see Figure III-7). In front of the new building along Shattuck Street, an increase is possible both near the northwest corner of the new building (Melbourne 2 and 3) and under the new bridge (Melbourne 3). To the north of the new building, the more northerly of these northwest winds may result in somewhat increased winds (Melbourne 3) with the possibility for the wind to come in the more easterly ambulance entrance and out the westerly one. The open plaza should not be affected from the winter/early spring northwest winds because of the time of year when people are not using the plaza.

1.6 The Southwest (Summer) Winds

Existing Conditions

The southwest summer winds blow directly across Francis and Shattuck Streets and up Binney Street toward the main Dana Farber Cancer Institute Building (see Figure III-8). These winds probably cause some windiness near the west corner of the Patient Tower (Melbourne 3) in the same manner as northwest winds, but in the opposite direction. Because there is no gap between the tower and the low-rise over much of the southwest facade, that west corner probably is the only windy area near the base of the Patient Tower for southwest winds.

The Hospital's main entrance on Francis Street, which is under the low-rise that covers the parking area, is quite sheltered from southwest winds. Because the low-rise parts of Brigham and Women's Hospital that face Francis Street are of similar height to the 2- and 3-story houses across Francis Street, the whole street will not be windy for such winds. However, for winds more to the south or west, the sidewalk adjacent to the Hospital, particularly at the south end near the Ambulatory Plaza, probably will be breezy.

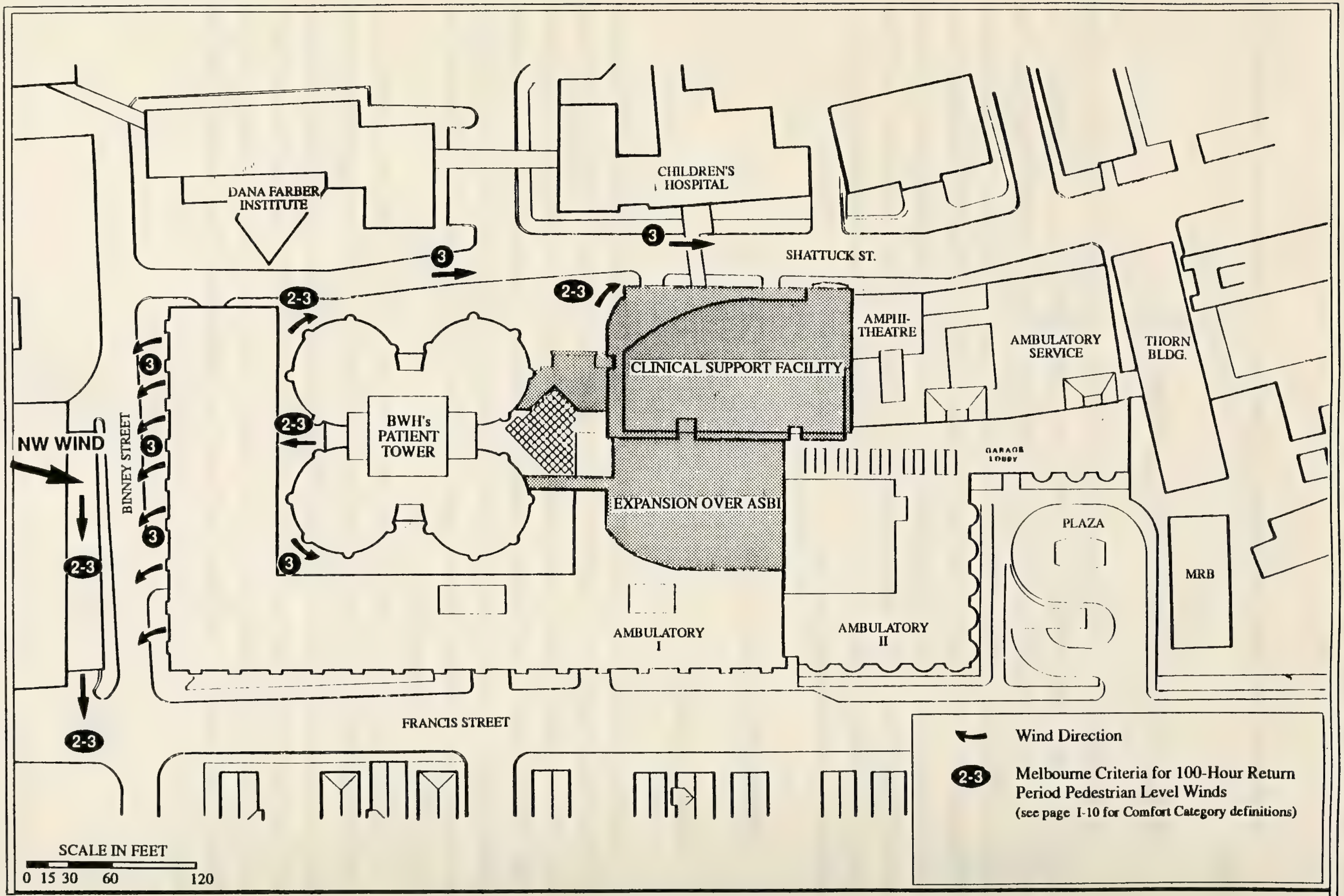


FIGURE III-7
NORTHWEST WINDS
CLINICAL SUPPORT FACILITY

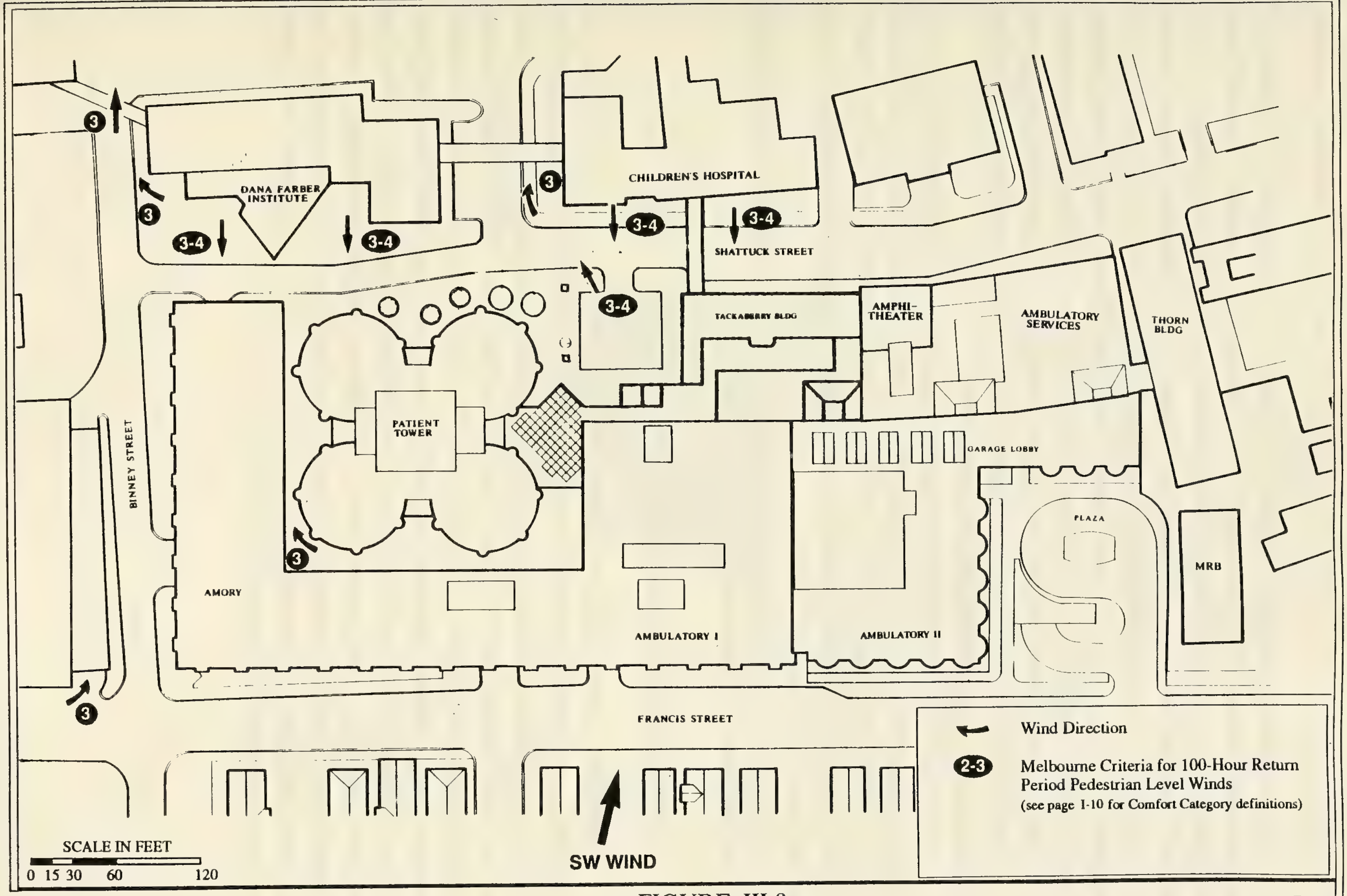


FIGURE III-8
SOUTHWEST WINDS
EXISTING CONDITIONS

For southwest winds, Shattuck Street is in the lee of the Hospital. But, because of the increased building heights of some of the buildings on the opposite (northeast) side along Shattuck Street, there probably are some breezy areas today. For instance, the Dana Farber Building at the corner of Shattuck and Binney Streets is 8 stories and much higher than the low-rise next to the Patient Tower across the street. Thus, for southwest winds, it is expected that there will be a vortex flow in front of that Dana Farber Building, causing winds to blow across Shattuck Street toward the Patient Tower, and also around the corner of the 8-story Dana Farber Building into Binney Street from Shattuck Street (Melbourne 3). (Figure III-3 provides a general representation of winds around a tall building including the potential vortex flow at its windward base.)

Currently, the 7-story Children's Hospital Building across Shattuck Street from the Tackaberry Building is probably sufficiently higher than the 2-story Tackaberry Building to cause a similar, but weaker vortex, to form in Shattuck Street in front of the 6-story Children's Hospital Building. These conditions are also likely to cause a wind to blow into the short street to Children's Hospital.

Further to the southeast down Shattuck Street, the Amphitheater and Ambulatory Services Buildings provide shelter from southwest winds.

Impact of Clinical Support Building on Southwest Winds

Adding the Clinical Support Facility to the complex will have little or no effect on the winds along Francis Street for southwesterly winds. It will also have little effect on any of the winds in Shattuck Street caused by southwest winds, except directly to the northwest and northeast sides around the project's north corner (see Figure III-9). Because the new building will be taller than the 7-story Children's Hospital Building, the vortex in Shattuck Street will be eliminated. However, the winds between it and the Patient Tower will likely increase, and may, if they reach street level, cause windiness in the open space between the two buildings and in the entrance street to Children's Hospital (Melbourne 3) across Shattuck Street. One mitigation to this windiness will be the series of planters containing evergreen and flowering deciduous plant material at the base of the Patient Tower which should serve to soften the windiness in the plaza.

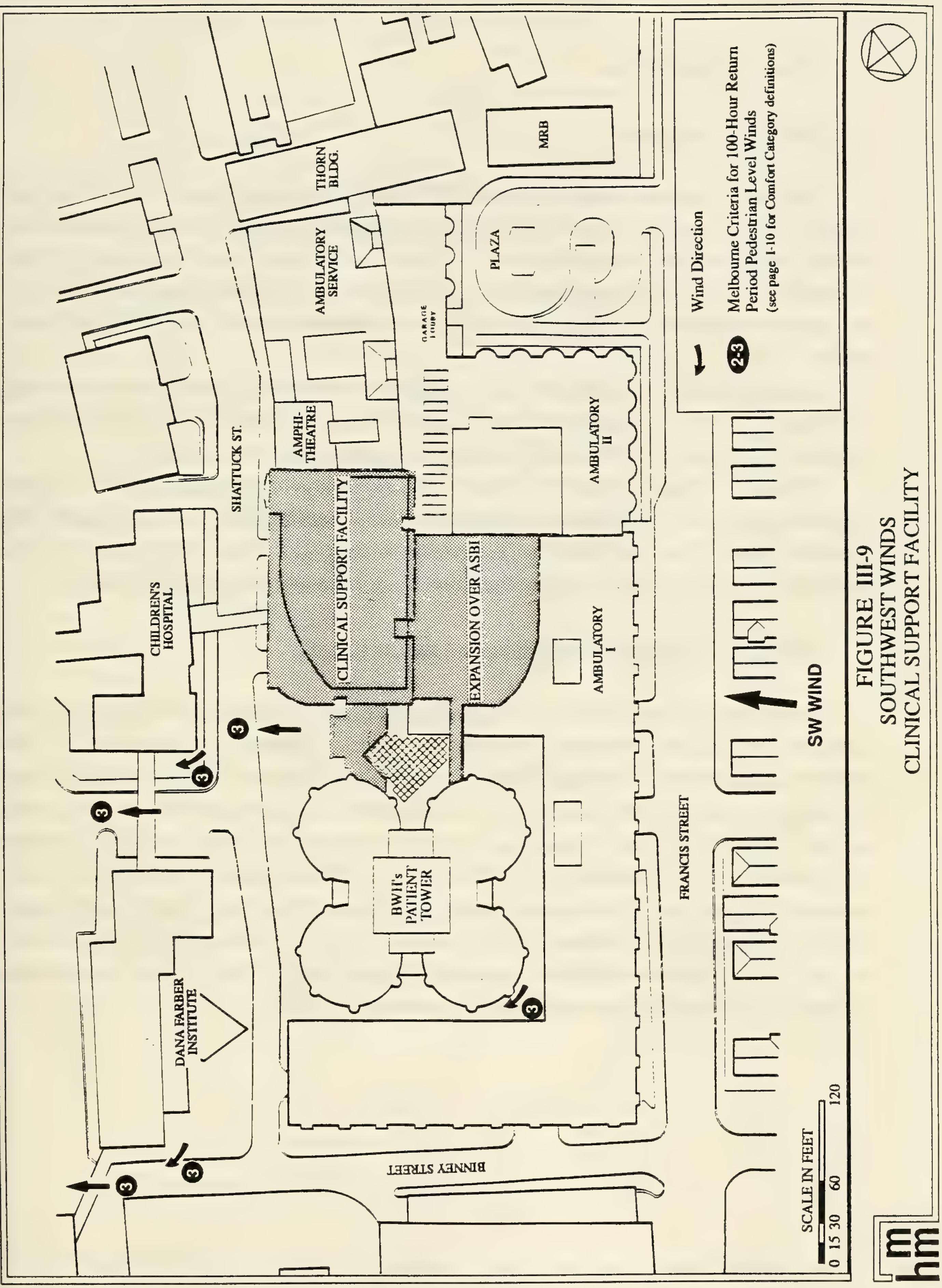


FIGURE III-9
SOUTHWEST WINDS
CLINICAL SUPPORT FACILITY

1.7 Easterly (Storm) Winds

Exisiting Conditions

The most common storm winds are northeasterly. Northeast winds will blow directly at the northeast wall of the proposed Clinical Support Building. Presently, winds blow directly down Binney Street from Shattuck Street to Francis Street (see Figure III-10). Currently, the whole of Francis Street is in the lee of the Hospital and thus, that street and the main entrance are both protected from these northeast as well as east and southeast winds.

Again, it is expected that the north and east corners of the Patient Tower are windy (Melbourne 2 or 3). Also, there may be significant winds blowing up the short street opposite the Patient Tower leading to Children's Hospital (Melbourne 3 or 4).

The rest of Shattuck Street is probably not very windy during northeast storms. For southeast winds, the wind blows up Shattuck Street towards Binney Street and under the existing bridge. The area from the Tackaberry Building to Children's Hospital may be somewhat more windy than the rest of the street but is probably still in Melbourne 4.

Impact of Clinical Support Building on Easterly Winds

When the Clinical Support Facility Building is built, its primary effect on pedestrian level winds caused by northeast winds will be in Shattuck Street (see Figure III-11). The distance between it and the Patient Tower may result in increased winds at the east corner of the Patient Tower (Melbourne 2 or 3), and somewhat stronger winds at the north corner of the Clinical Support Facility and in the courtyard between the two buildings (Melbourne 2 or 3). Extending the low rise section of the proposed Tower Lobby project towards Shattuck Street in the area between the Patient Tower and the Clinical Support Facility has significantly reduced possible winds at pedestrian level near the north corner of the Clinical Support Facility and near the east corner of the Patient Tower by deflecting these winds primarily on the roof level of the lower two stories.

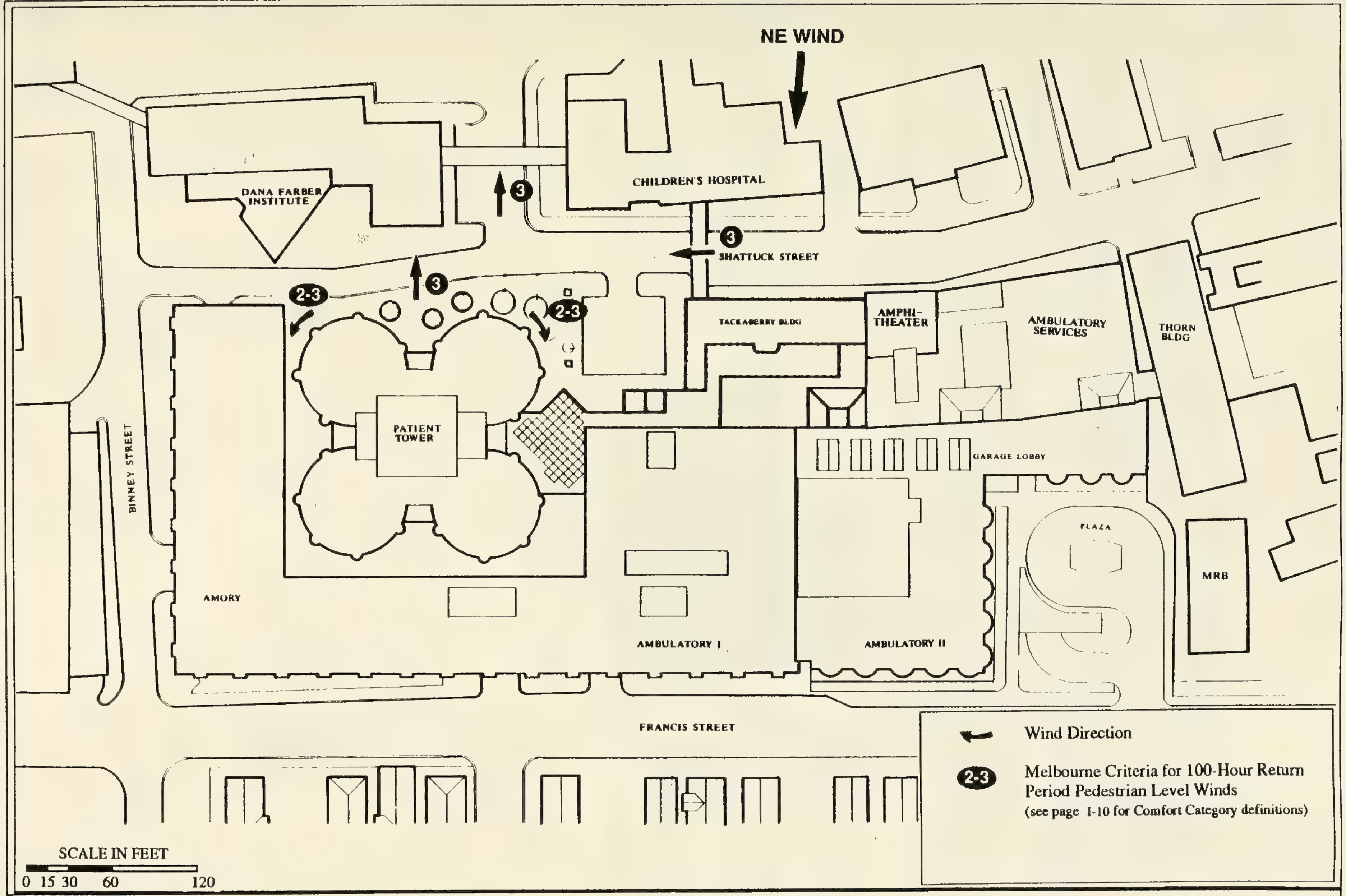


FIGURE III-10
EASTERLY WINDS
EXISTING CONDITIONS

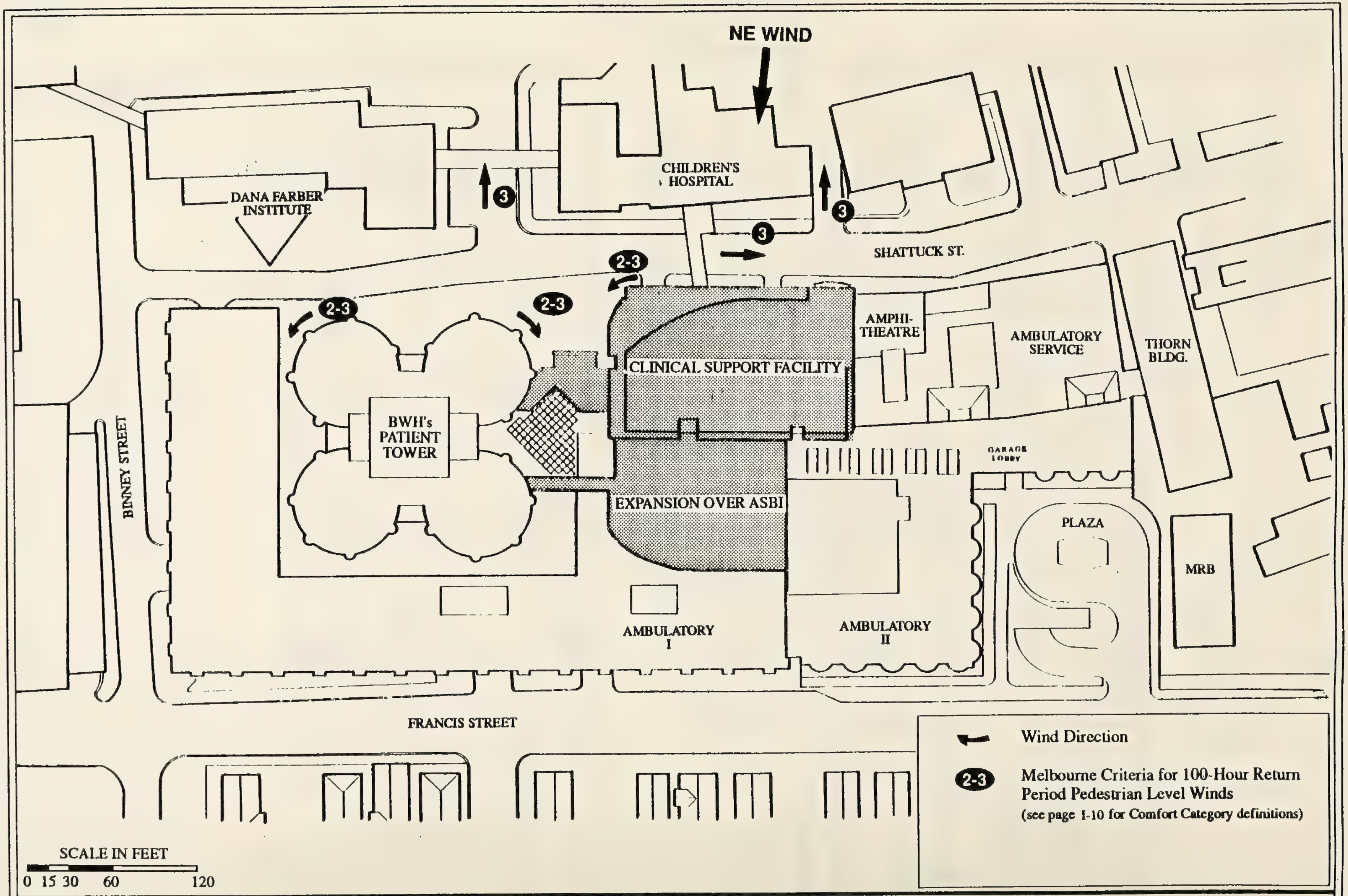


FIGURE III-11
EASTERLY WINDS
CLINICAL SUPPORT FACILITY

1.8 Summary

Currently, the only windy areas in the vicinity of the proposed Clinical Support Facility are along Binney Street between Francis and Shattuck Streets and near the east, north, and west corners of the Patient Tower (Melbourne 2 or 3). While there is some windiness under the existing bridge from the Tackaberry Building to Children's Hospital, and in the short street off Shattuck Street leading to Children's Hospital, it is probably not annoying (Melbourne 3 or 4).

Adding the Clinical Support Facility may increase the winds at the east corner of the Patient Tower (Melbourne 2 or 3), and possibly in the short street opposite that corner leading to Children's Hospital (Melbourne 3). There may also be windier conditions at the north corner of the Clinical Support Facility (Melbourne 2 and 3).

1.9 References

[1] Melbourne, W.H., "Criteria for Environmental Wind Conditions", Journal of Industrial Aerodynamics, Vol. 3, 1978, pp. 241-249.

[2] Davenport, A.G., "An Approach to Human Comfort for Environmental Wind Conditions", Proceedings, Colloquim on Building Climatology, Stockholm, Sweden, 1978.

2.0 SHADOW IMPACTS

2.1 Introduction

An analysis has been conducted to determine the Clinical Support Facility's shadow impact on the immediate area surrounding its site. This section reviews the course of a solar year, including the Vernal and Autumnal Equinoxes, and the extreme conditions of the Summer and Winter Solstices.

2.2 Conclusions

The majority of the new shade zones created by the proposed building occur on the rooftops of the adjacent lower scale buildings, with the exception of the Patient Tower during the early morning hours. See Figures III-12 through III-23.

The winter solstice represents the scenario with the most consistent shadows, when the sun is at its lowest position in the sky and the shadows are at their maximum length. As can be expected, the early morning and late afternoon shadow conditions are typical of those found in a dense urban area.

During the summer solstice, which represents the point at which the sun is at its highest position and the daylight hours are at a maximum during the course of the solar year, the shadows cast by the Clinical Support Facility on the pedestrian areas are minimal.

The shadow study diagrams indicate that the net change of shadow coverage created by the Clinical Support Facility on pedestrian areas will occur primarily during the Spring and Fall months on the exterior courtyard space between the existing patient tower and the new building.

This will create a shaded area which should be comfortable for eating and socializing during the hot summer months. Landscaping plans for the courtyard will consider the shadow effects in the plant selections and tree arrangements. During the pleasant months of the autumn, the courtyard is not expected to be shaded during the lunch hours and is expected to be a comfortable area for congregating and pedestrian passage. During the spring when the weather is not as mild area will be shaded until the afternoon.

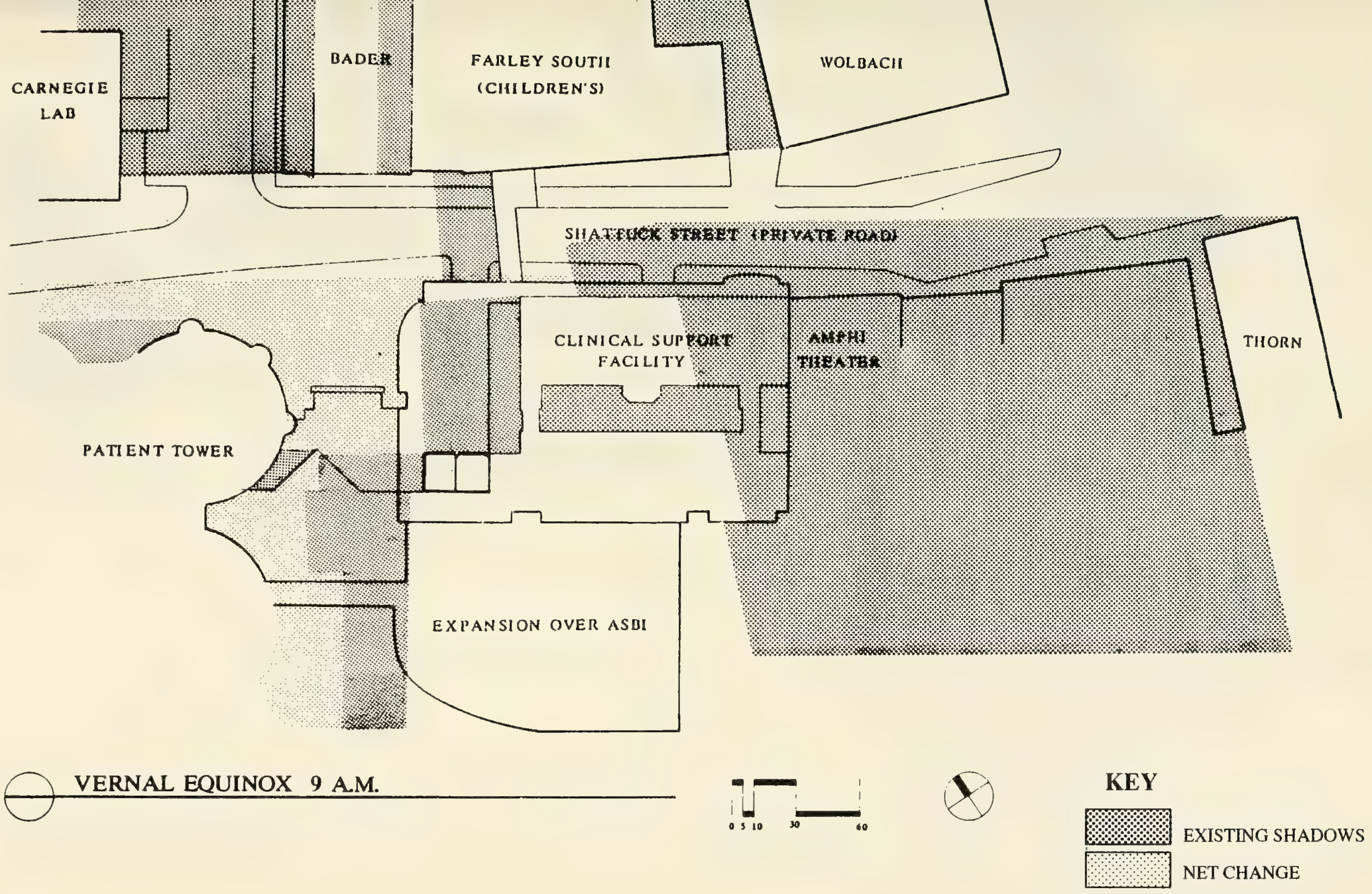


FIGURE III-12

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY VERNAL EQUINOX
TSOI / KOBUS & ASSOCIATES ARCHITECTS SCHEMATIC DESIGN
SS-1

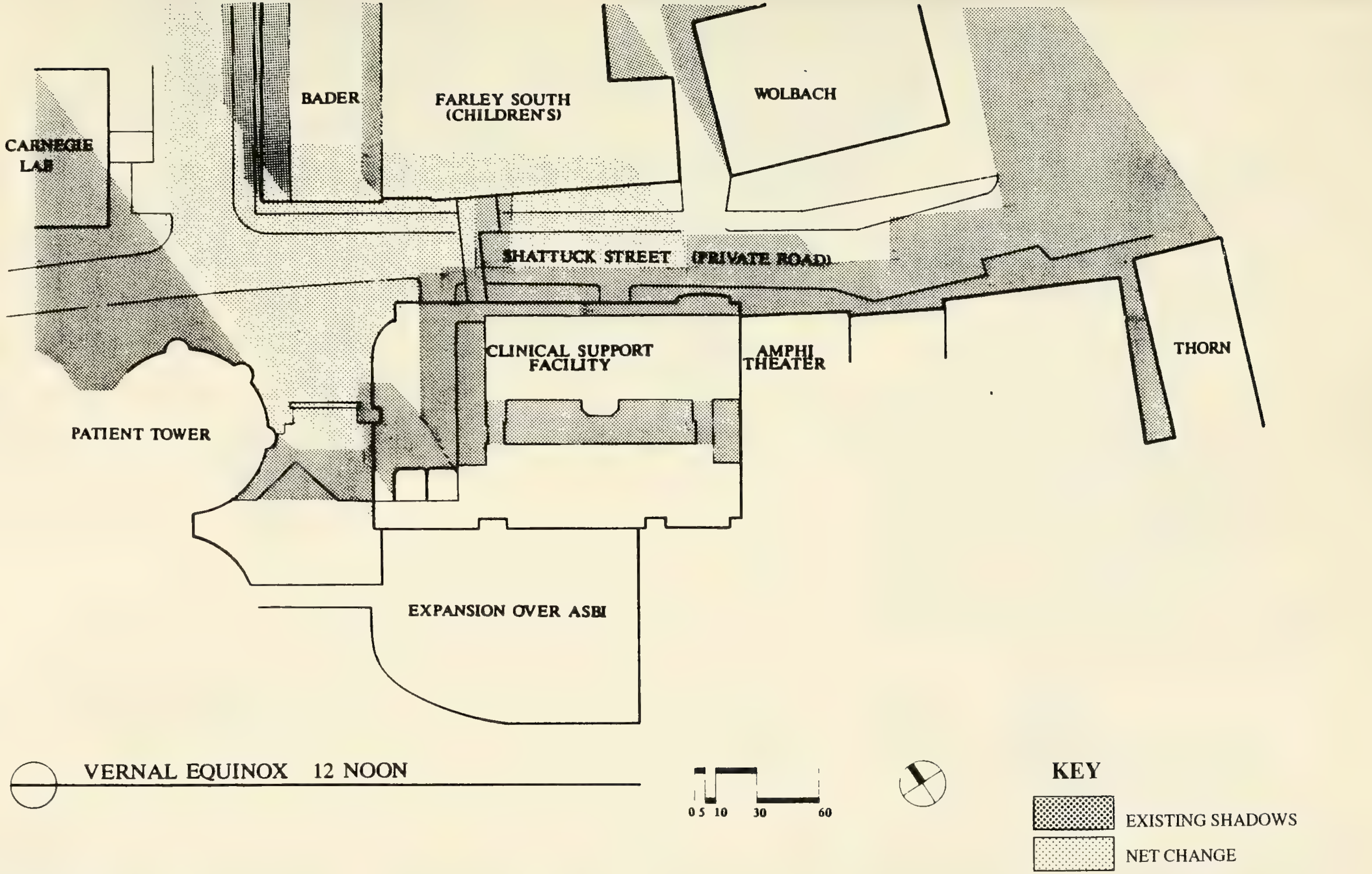


FIGURE III-13

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY VERNAL EQUINOX

TSOI/KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

SS-2

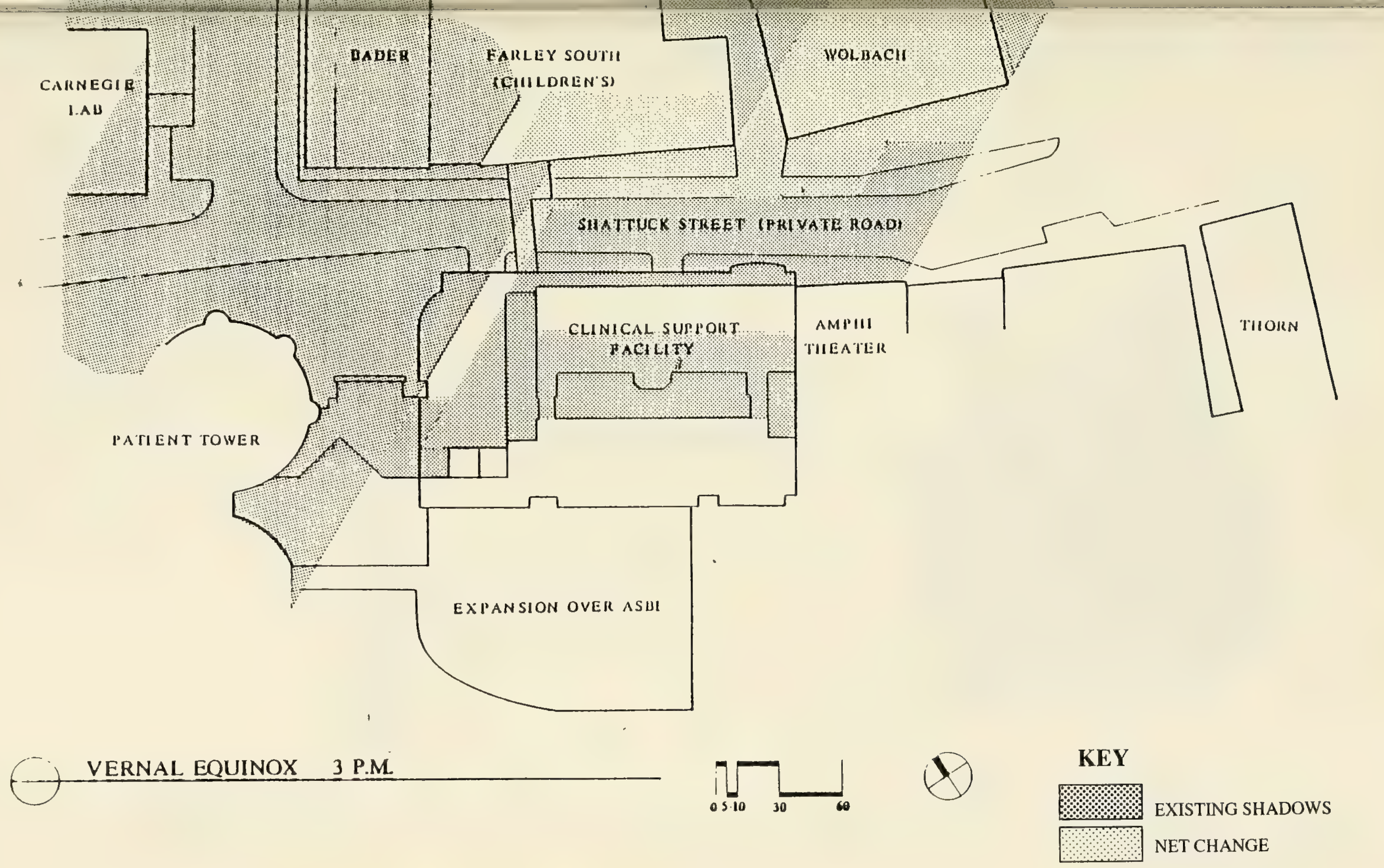


FIGURE III-14

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY VERNAL EQUINOX

[illegible] KOBUS & ASSOCIATES ARCHITECTS SCHEMATIC DESIGN SS-3

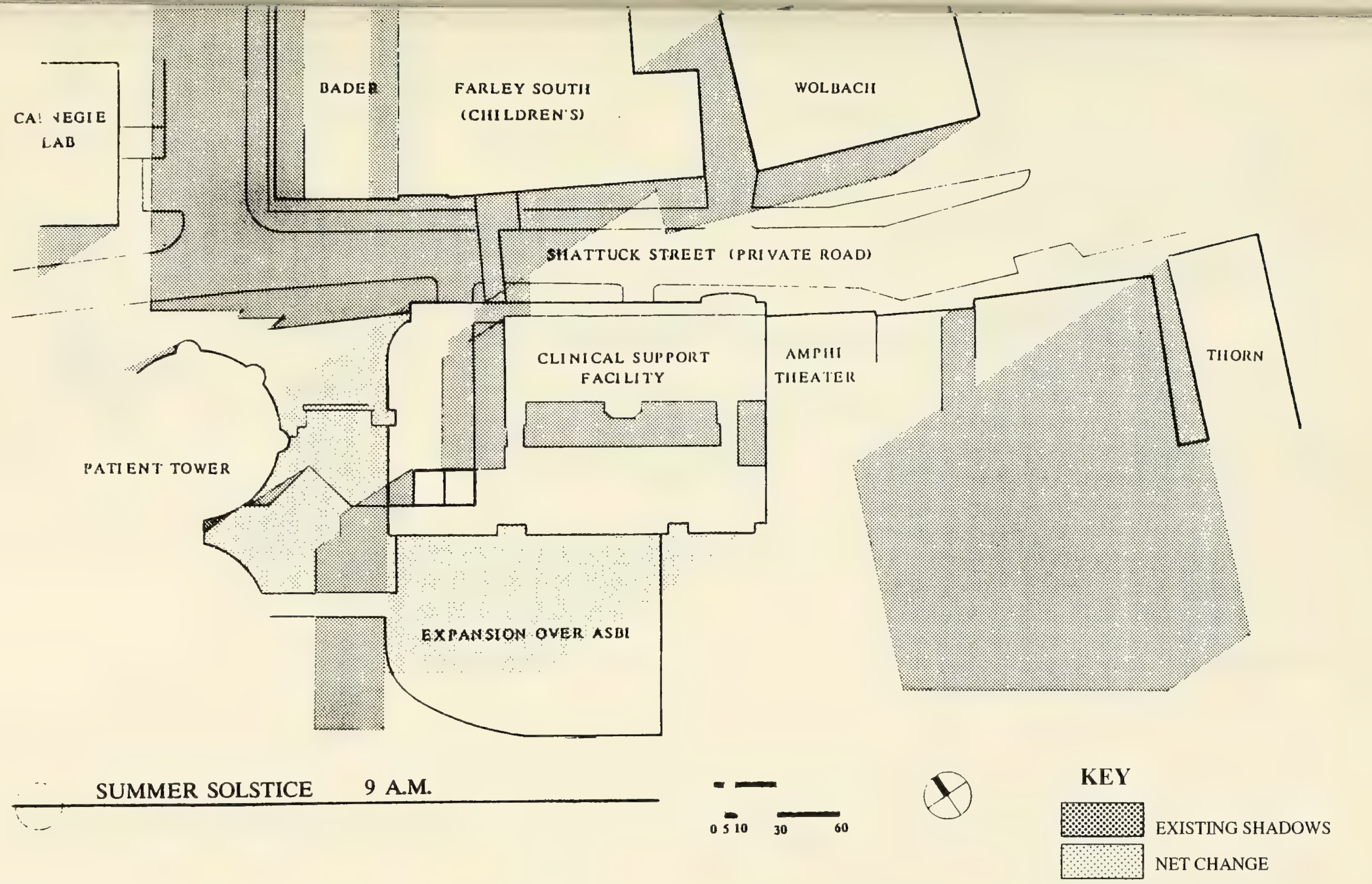


FIGURE III-15

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY SUMMER SOLSTICE

TSOI/KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

SS-4

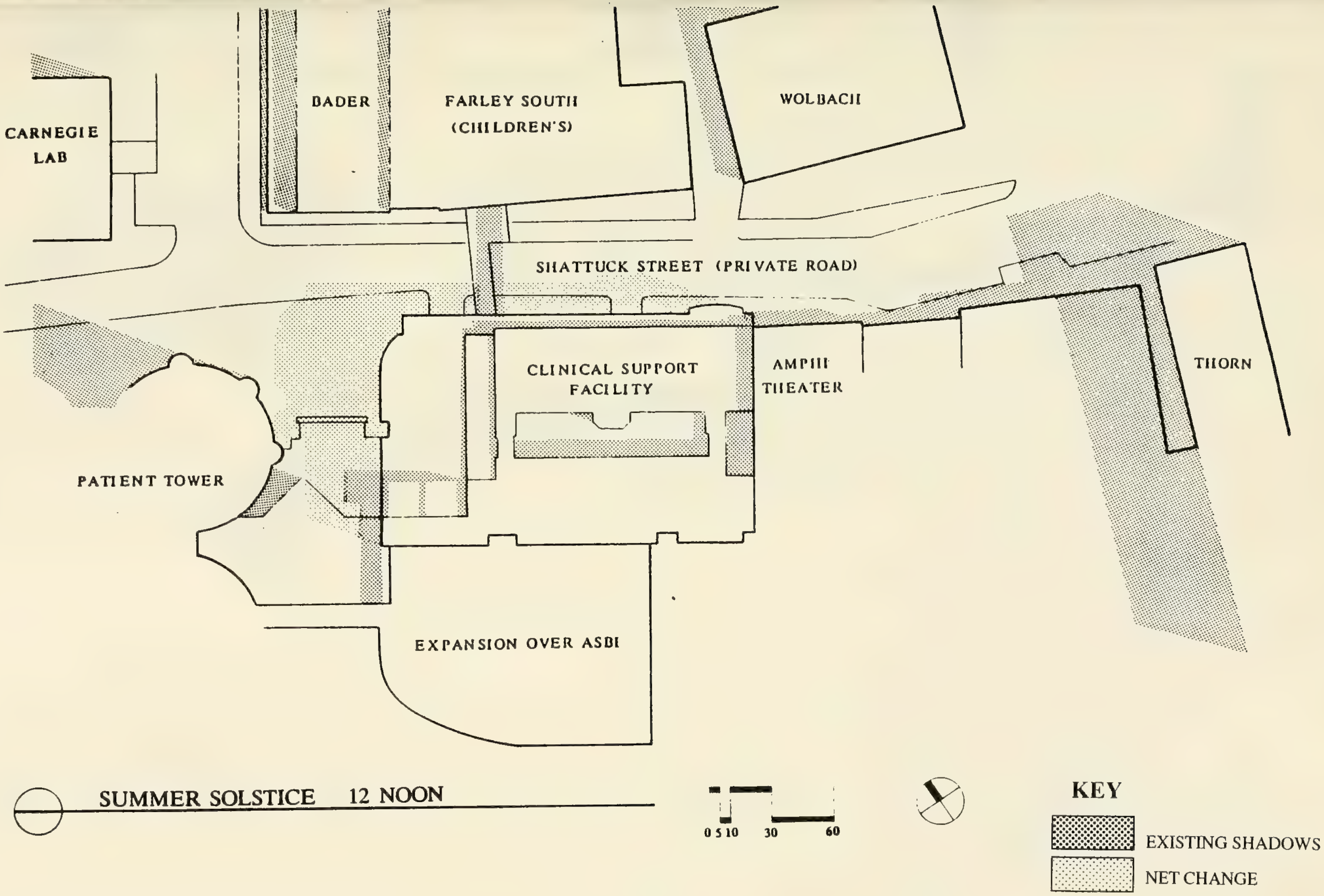


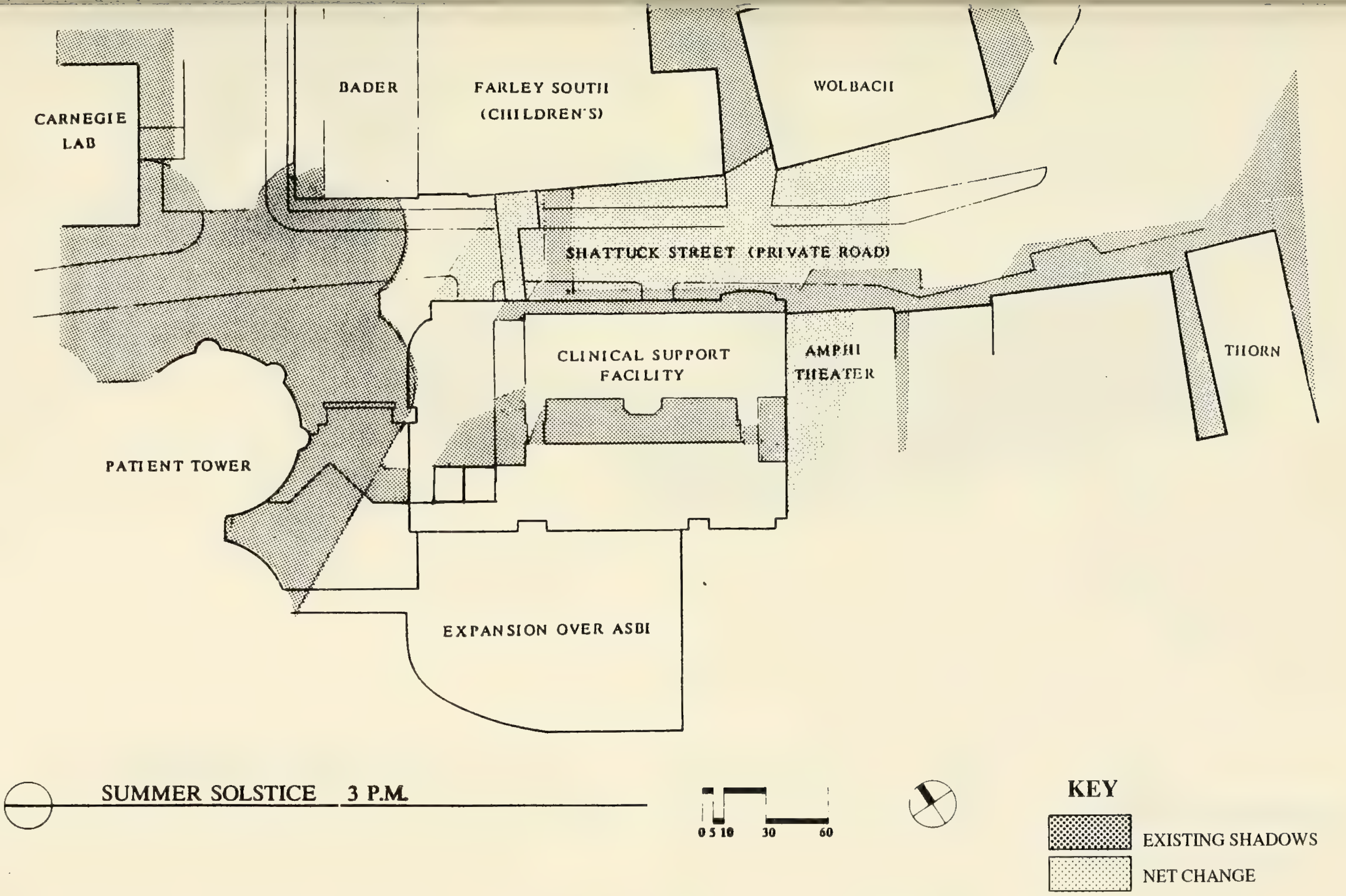
FIGURE III-16

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY SUMMER SOLSTICE

TSOI/KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

SS-5



SUMMER SOLSTICE 3 P.M.

FIGURE III-17

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY** SUMMER SOLSTICE

TSOI/KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] [illegible]

SS-6

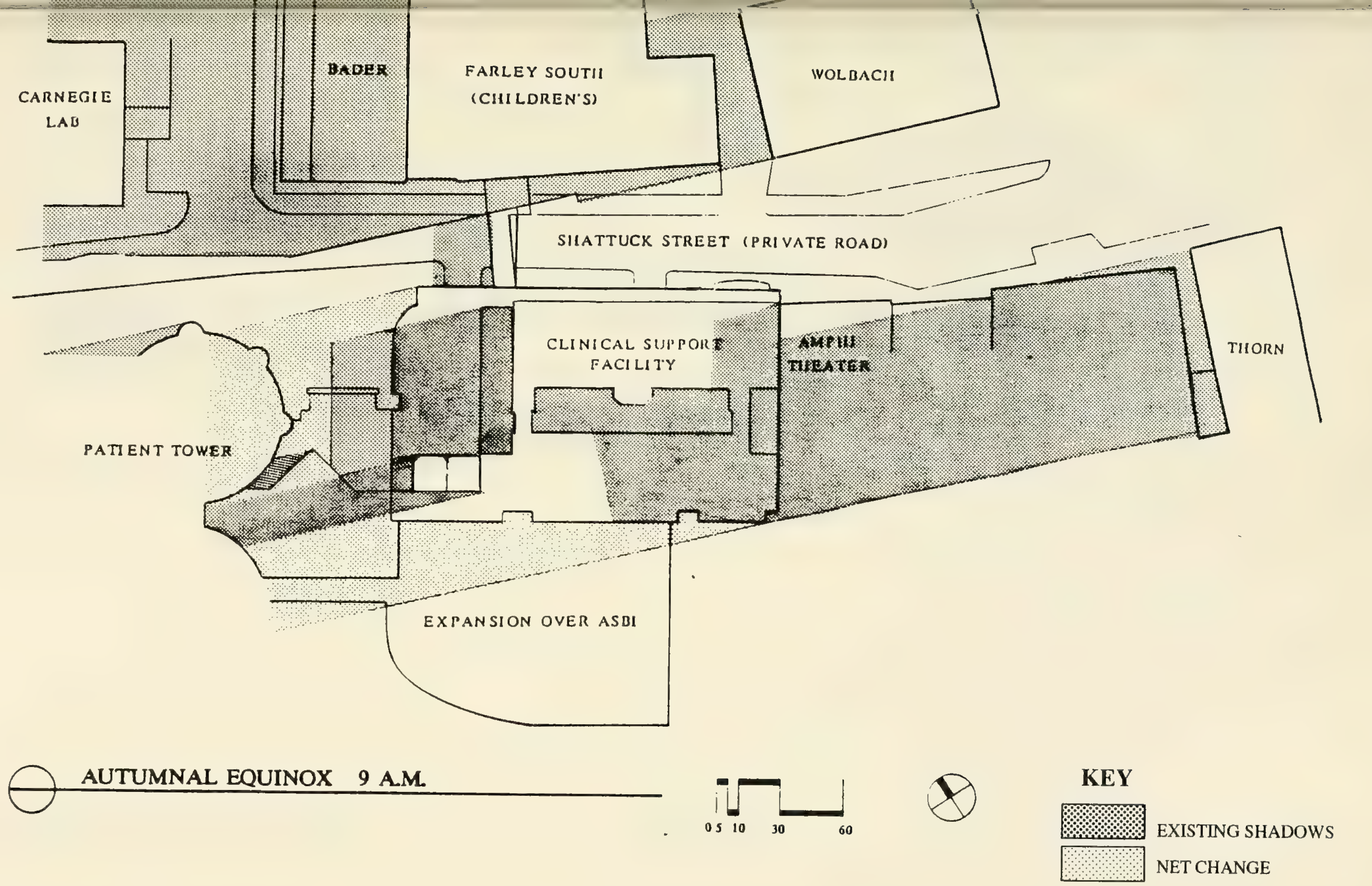


FIGURE III-18

BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY* AUTUMNAL EQUINOX
TSOI/KOBUS & ASSOCIATES ARCHITECTS
SCHEMATIC DESIGN [illegible]
SS-7

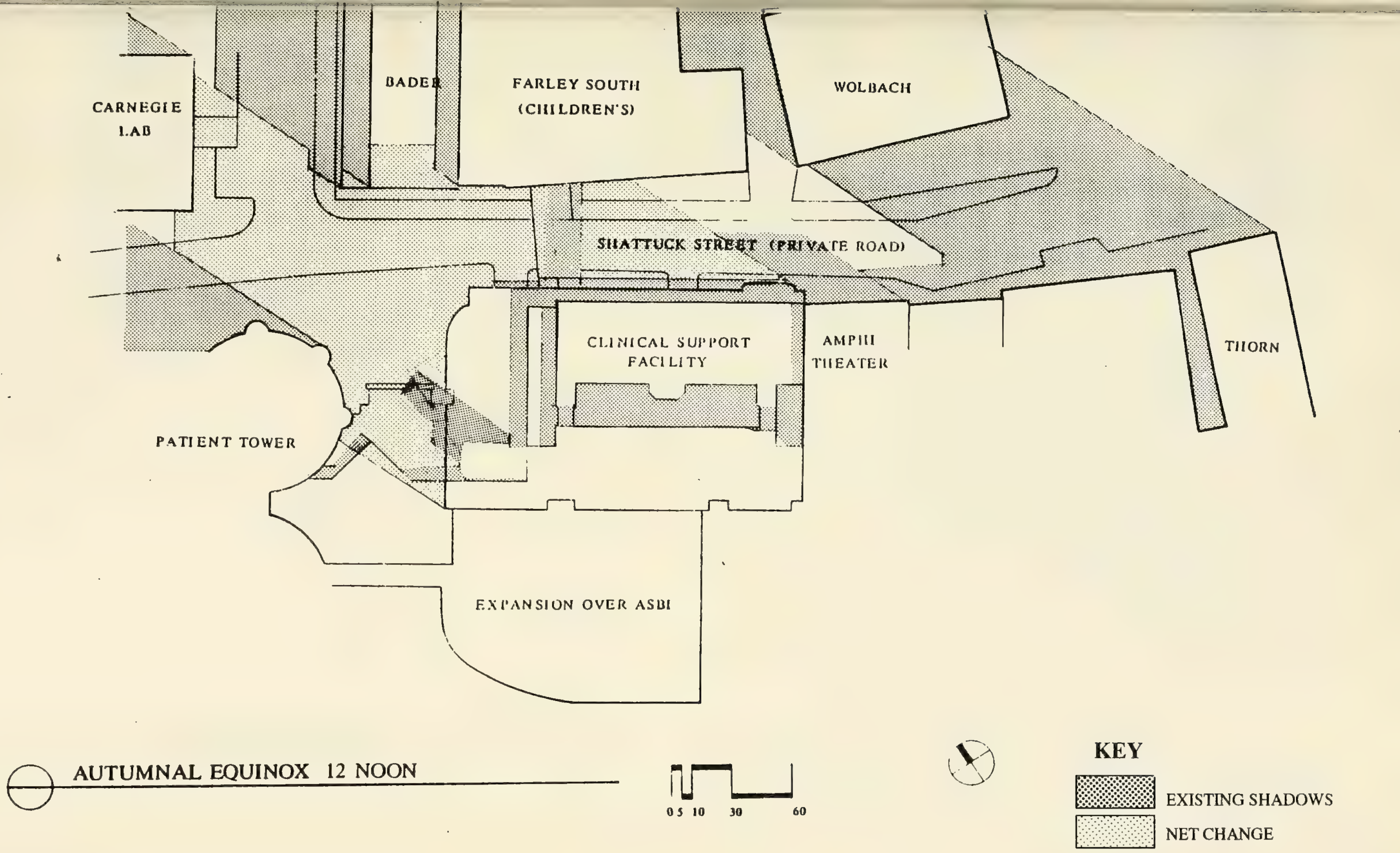


FIGURE III-19

BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY* AUTUMNAL EQUINOX

TSOI/KOBUS & ASSOCIATES ARCHITECTS SCHEMATIC DESIGN SS-8

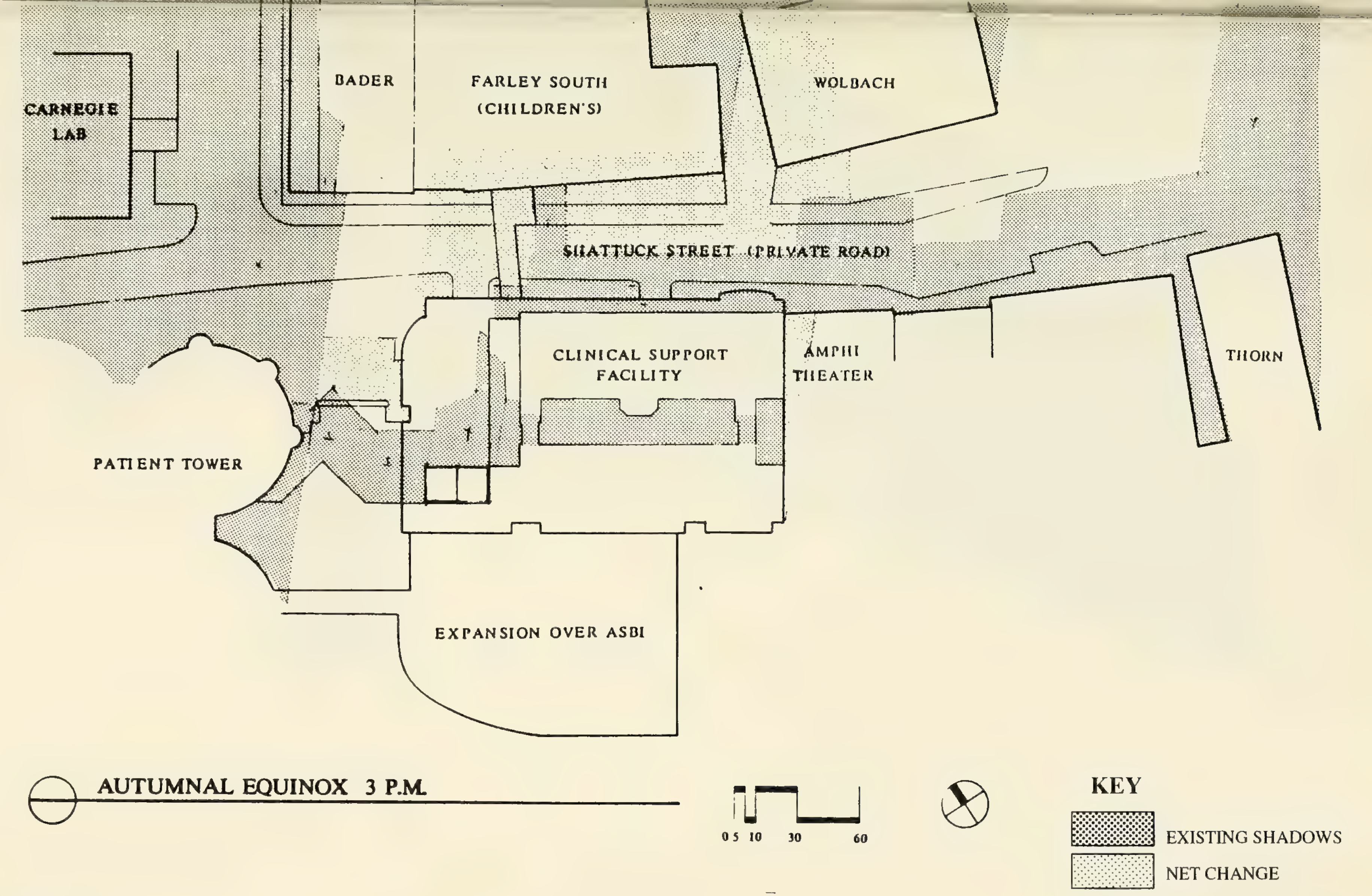


FIGURE III-20

BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY* AUTUMNAL EQUINOX

[illegible] & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

SS-9

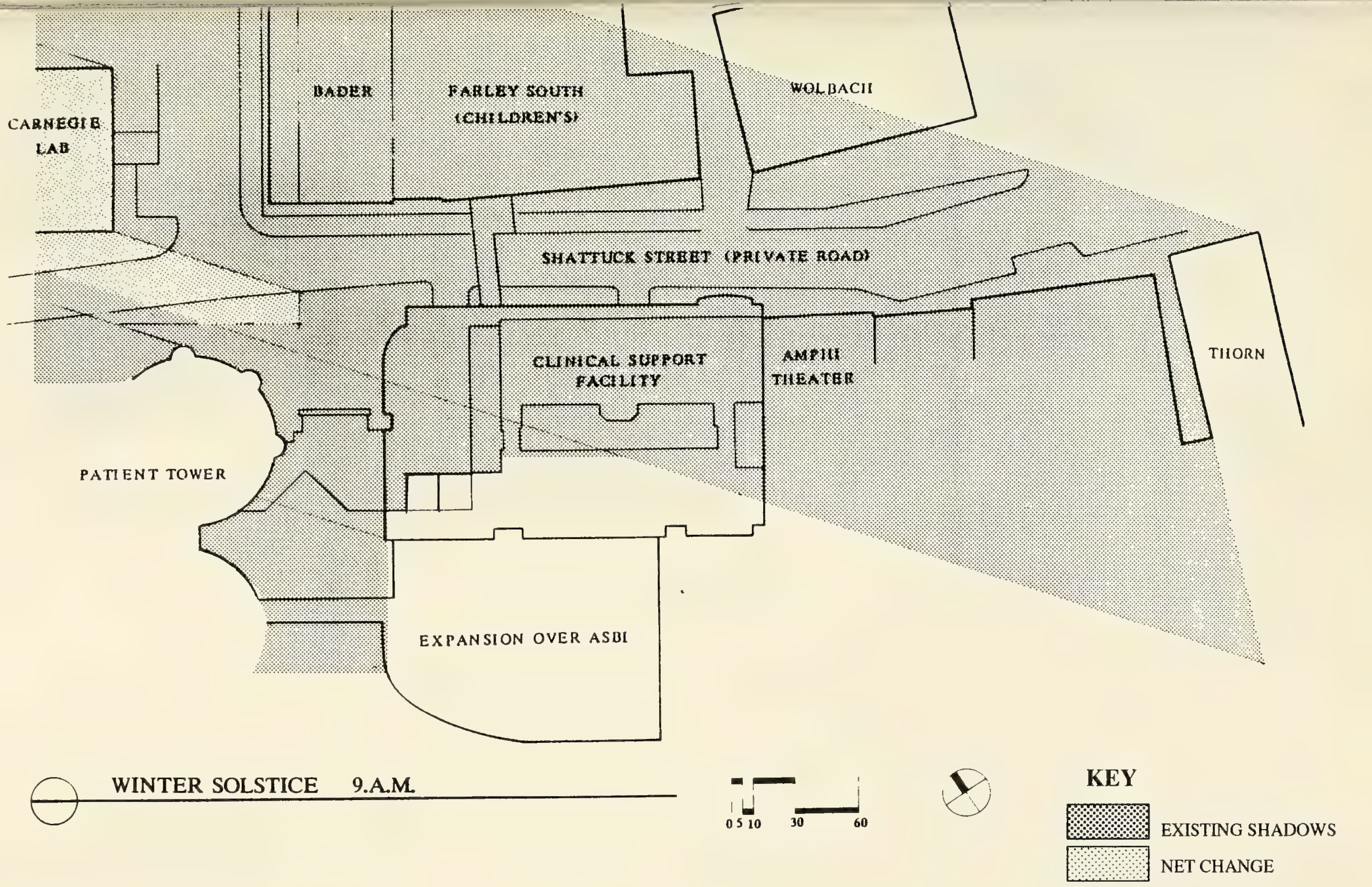


FIGURE III-21

BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY* WINTER SOLSTICE

TSOI/KOBUS & ASSOCIATES ARCHITECTS SCHEMATIC DESIGN

SS - 10

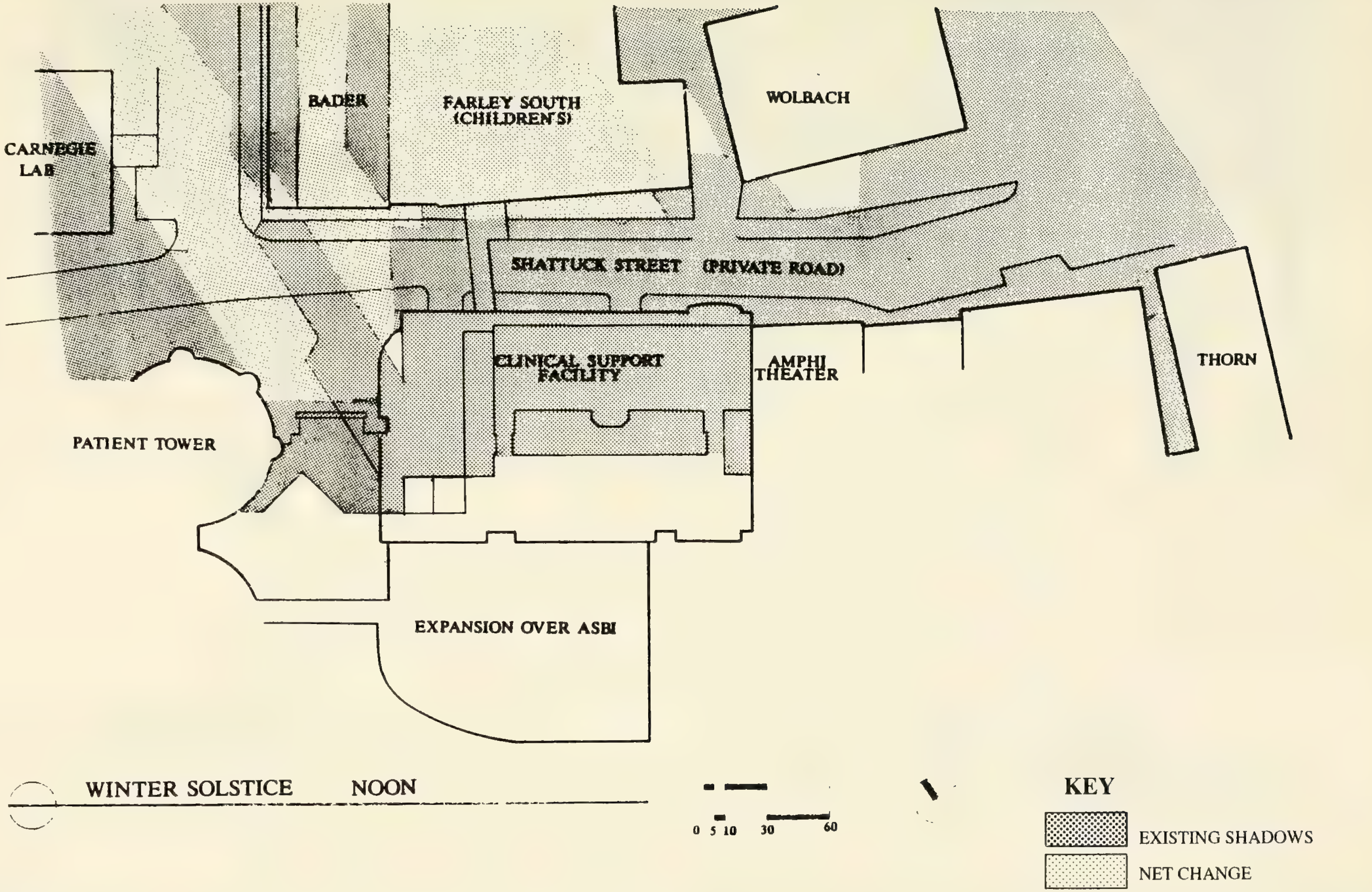


FIGURE III-22

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY WINTER SOLSTICE

ISOI/KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

SS-11

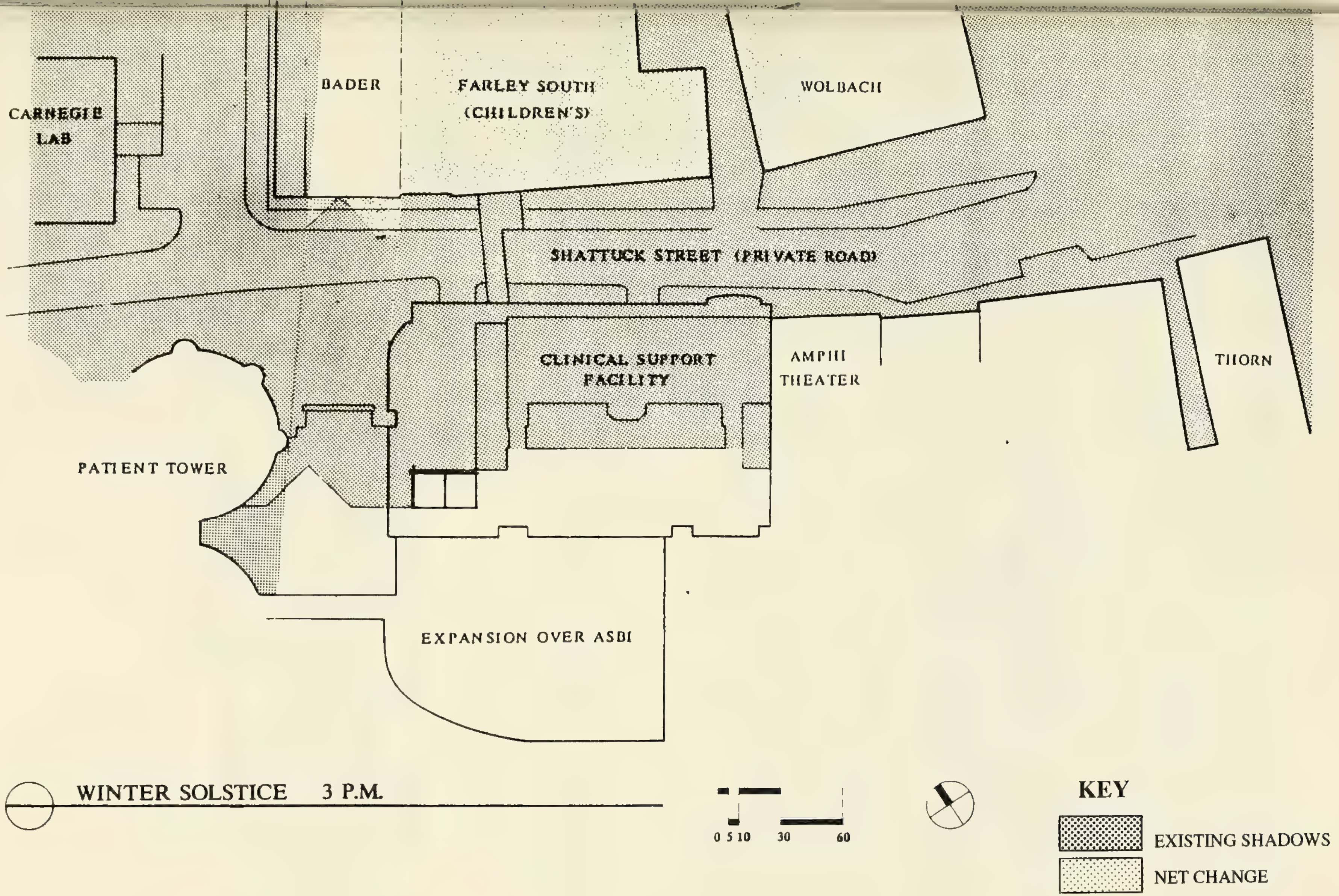


FIGURE III-23

BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY* WINTER SOLSTICE

TSOI/KOBUS & ASSOCIATES ARCHITECTS SCHEMATIC DESIGN

SS-12

3.0 GEOTECHNICAL IMPACTS

3.1 Existing Conditions

3.1.1 Existing Site Conditions

The project site is currently occupied by an asphalt concrete ambulance parking lot, a portion of the below-grade levels of the Brigham & Women's Hospital Tower building and two 2-story, older brick buildings. The northern older building, fronting along Shattuck Street, is known as the Tackaberry building. The southern structure is designated as the F building. An underground 25,000-gallon fiberglass fuel oil tank, which serves the Brigham & Women's Hospital, is also located in the ambulance parking lot.

The Tackaberry and F buildings are separated by a courtyard contiguous with the ground floor levels of the two buildings. Current site grades along Shattuck Street, in front of the proposed Clinical Support Facility (CSF), slopes up from about El. 37.5 to 39.5 from west to east. Pavement grades in the ambulance parking lot occur at approximate El. 37.5.

3.1.2 Adjacent Buildings

The following is a summary of the pertinent geotechnical related detail of the structures which abut the site:

- Southern Side

  At the south limit of the CSF site is the Pike. The Pike is a two-story structure with one basement, and serves as the main corridor for pedestrian traffic and utilities to connect the various Brigham and Women's Hospital buildings. The basement portion of the Pike contains utilities, and has a slab-on-grade at El. 34.75. The Pike is about 20 ft. wide, and each of its outside walls serve as bearing walls which are supported by reinforced concrete strip footings bearing at about El. 33.5

Immediately south of the Pike are the Ambulatory I and II buildings. The southernmost wall footing of the Pike was underpinned, using concrete pit underpinning and tiebacks, when these two structures were built in the early to mid-1980's.

The lowest basement floor level for Ambulatory I occurs between El. 0.5 and El. -4.0 within the building area abutting the Pike and the CSF, and at El. 4.0 for the rest of the structure, and is supported by footings bearing on glacial till and bedrock. The structure is designed to resist hydrostatic uplift by means of permanent tie-downs anchored into rock.

The Ambulatory II building has a lowest basement floor at El. 19 and is supported by footings bearing on glacial till and rock. A perimeter and underslab drainage system was installed for this structure at about El. 18 to control the groundwater.

- Western Side

The below-grade portion of the Brigham & Women's Hospital Tower (the original Affiliated Hospitals Center Phase I building), herein referred to as the Tower, extends into the western edge of the site. The portion of the tower adjacent to the site is founded on footings bearing in the glacial till and bedrock. The structure is designed to resist hydrostatic uplift by means of permanent tie-downs anchored into rock. The bottom slab for the Tower is at El. 0.5. A tied-back soldier pile and lagging system, associated with the Tower construction, is believed to remain in-place, offset approximately 10 to 20 ft. from the Tower basement wall (at shallow depths).

- Eastern Side

The CSF site is abutted on the east by the Amphitheater and Surgical buildings. Available information indicates that the Amphitheater has a basement floor at El. 34.75 and is supported by footing foundations bearing at about El. 33.5. The Surgical building appears constructed with a ground floor level slab-on-grade at El. 43.5 and no basement.

No specific foundation information was found for the Surgical building. However, based on comparison to Amphitheater construction, it is anticipated that this structure is supported by spread footings bearing between El. 33.5 and El. 42 (1.5 feet below interior floor level).

- Northern Side

  The CSF site is abutted on the north by Shattuck Street. Utilities including sewer, water, drain, gas and the MATEP Tunnel are known to exist below Shattuck Street.

3.1.3 Subsurface Soil and Rock Conditions

Geotechnical data indicate that the subsurface soils consist of fill overlying marine deposits, glacial till, and bedrock. These subsurface strata are described below, proceeding downward from the ground surface:

- Fill - As a result of earlier development at the site, a layer of man-placed fill blankets areas where buildings do not exist. The fill is generally medium stiff to hard, yellow-brown to gray silty clay, but it also consists of medium dense, black silty coarse-to-fine sand with brick and cinders. The thickness of the fill encountered in subsurface explorations completed at the site range from 6 to 17 feet.

- Marine Deposits - The upper portion of these deposits generally consists of still to hard silty clay, with varying amounts of fine gravel and fine sand. The upper portion of the clay is typically yellow-brown and grades to a gray color with depth. The lower portion of these deposits is a fine sand silt to silty fine sand. The total thickness of the marine deposits encountered in subsurface explorations completed at the site ranged from 16 to 42 feet.

- Glacial Till - This deposit typically consists of very dense, light brown to gray, coarse-to-fine sandy silt, little fine gravel, trace clay. In nearby construction for the Tower and Ambulatory building projects it has been found to contain large boulders. Available information indicates the thickness of the till ranges from 5 to 12 feet.

- Bedrock - Bedrock below the site can be described as moderately hard to hard, fresh, pinkish-gray, very coarse to fine-grained conglomerate, known locally as the Roxbury Conglomerate or Puddingstone. The bedrock exists at depths ranging from approximately 36 to 53 feet below ground surface across the site.

3.1.4 Groundwater

Groundwater observation wells have been installed at the site. Two of the wells were installed in May 1989. Groundwater levels monitored at that time ranged from approximately El. 17 to 22. Additional wells were installed in December 1990. Groundwater levels monitored recently in both series of wells ranged from approximately El. 3 to 7. A design water level of El. 22 has been adopted for the project.

3.2 Proposed Project

3.2.1 Proposed Foundation Type

The proposed structure is to be founded primarily on a mat foundation bearing on the marine deposits, glacial till, or bedrock. This mat will be waterproofed and designed to resist hydrostatic uplift pressure.

3.2.2 Excavation Methodology

Foundation construction will require excavation of surficial fill, fine-grained marine deposits, glacial till and bedrock. Excavation of silts for foundation construction can be conducted with conventional earthmoving equipment.

Bedrock will be encountered within the southern portion of the excavation. If the amount of rock which must be removed is small, the rock may be fragmented utilizing non-explosive methods such as hoe-rams or expansive cement. If blasting is necessary, controlled blasting techniques will be utilized to limit vibrations of adjacent structures, protect the lateral support and underpinning systems, and limit over-excavation. It should be noted that controlled blasting was successfully utilized for rock excavation during construction of the existing Ambulatory II building.

3.2.3 Excavation Support

Construction of building foundations will require excavations of 25 to 40 feet below present site grade (see Figure III-24). Lateral support will be required on the southern, eastern and northern side of the site to protect adjacent buildings, sidewalks, utilities and streets. On western and portions of the southern sides of the site, adjacent to the existing Tower basement, lateral support will not be required since the existing basement extends to the same depth or deeper than the proposed construction.

The primary lateral excavation support concept being considered is soldier piles and lagging utilizing a combination of tie-backs and internal bracing. It is anticipated that the Amphitheater and Surgical building will require underpinning prior to general site excavation to protect these existing buildings from excessive ground movement due to excavation.

To limit potential adverse impacts to adjacent structures and utilities, performance criteria will be established with respect to ground movements and building settlement. Geotechnical instrumentation will be installed and monitored to observe the performance of the excavation and adjacent structures to document contractor compliance with established performance criteria.

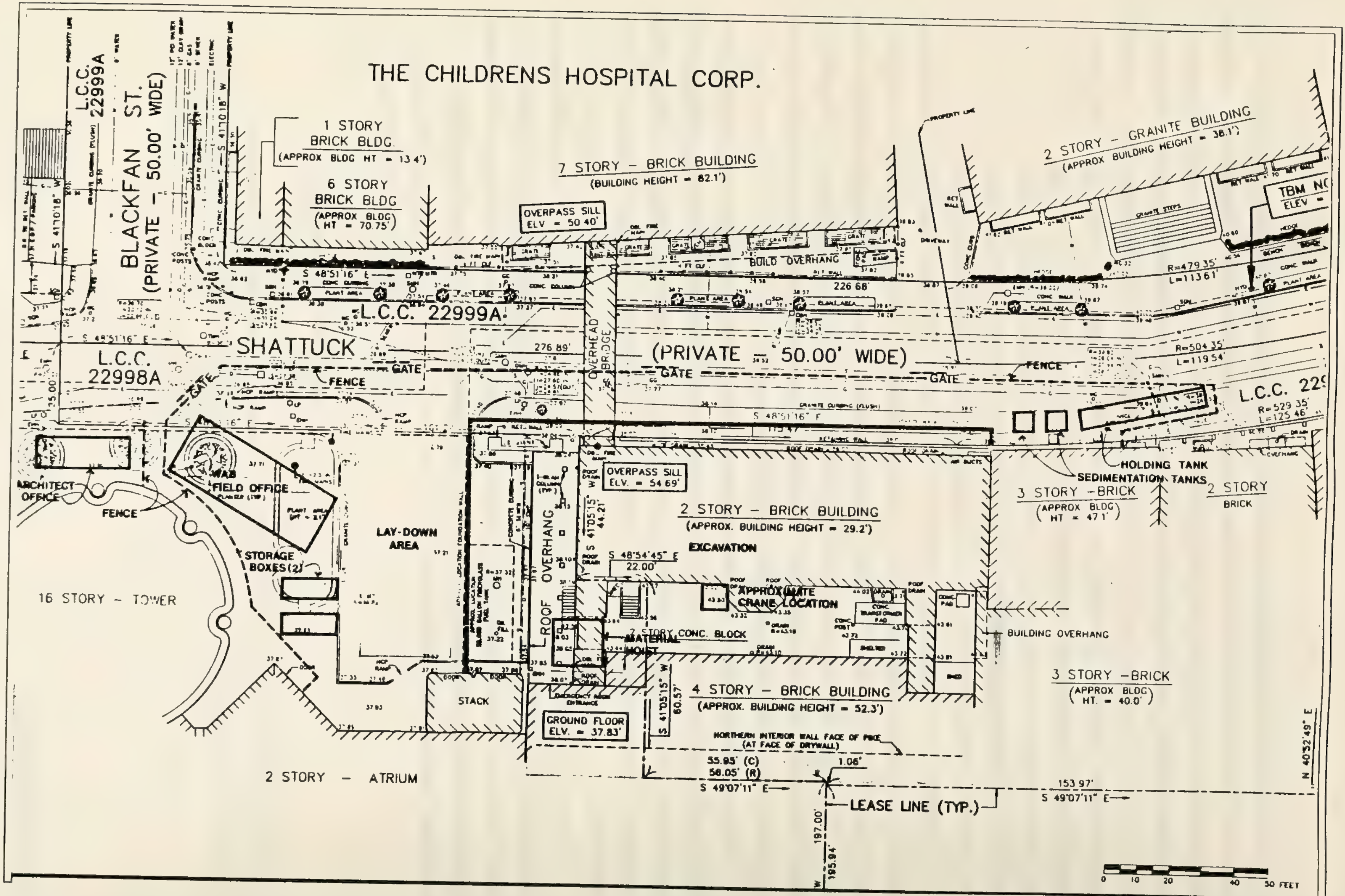


FIGURE III-24
PROPOSED CONSTRUCTION AREA

3.2.4 Construction Dewatering

Excavations are anticipated to extend below the groundwater table. Consequently, construction dewatering will be required. With soldier piles and lagging earth support, pre-drainage of the lower portion of the marine deposits (i.e., silty fine SAND) may be required since these soils may be sensitive to disturbance from groundwater seepage forces. It is envisioned that pre-drainage could be accomplished by deep pumping wells or vacuum wellpoints.

Adverse impact from construction dewatering are not anticipated since water levels would only be drawn down a few feet below their present levels. Construction will not require the use of permanent underdrains. Finally, a geotechnical consultant will monitor existing groundwater levels during excavation and throughout the construction process to assure that these levels are maintained.

Applications have been submitted to the Massachusetts Water Resources Authority (MWRA) and Boston Water and Sewer Commission (BW&SC) for a Temporary Sewer Use Discharge Permit for temporary construction site dewatering. It is planned that groundwater will be pumped through a sedimentation control system, periodically sampled and analyzed, and discharged to a MWRA/BW&SC sewer manhole located on Shattuck Street. As a contingency, it is also planned to obtain a temporary NPDES permit from the U.S. Environmental Protection Agency (EPA) for possible discharge to a storm drain on Shattuck Street, which in turn flows to the surface waters of the Charles River.

The sedimentation control system will consist of precast concrete sedimentation tanks and filter screens to control suspended solids. The geotechnical/environmental consultant will sample and analyze the discharge as necessary to monitor compliance with the applicable discharge permit criteria.

3.2.5 MGL Chapter 21E Issues

A spill of No. 2 fuel oil was discovered in the manhole vault of the 25,000 gallon underground tank during June 1989. It is believed by Brigham & Women's Hospital that this incident resulted from spillage through an unsecured access plug in the tank manway cover, during a single tank overfill event. Brigham and Women's Hospital estimated the spill volume at 200-gallons.

At the time of the spill, the Boston Fire Department, Massachusetts Department of Environmental Quality Engineering (DEQE, currently DEP), and Clean Harbors, a licensed pollution control contractor, were contacted. Haley & Aldrich, Inc. has subsequently prepared a "Report on Oil and Hazardous Materials Site Evaluation", dated April 1991 for the project site, which was submitted to DEP as part of an Application for Waiver of Approvals.

Impacts from the virgin oil spill appear to be limited to the 10 to 20 ft. wide backfill zone surrounding the existing BWH tower. In addition, low concentrations of volatile organic compounds (VOCs), apparently unrelated to the oil spill, have been identified in groundwater with total combined VOCs concentrations less than 0.5 ppm.

An Excavated Soil and Dewatering Management Plan (ESDMP), dated June 1991, to outline contractor requirements for soil excavation and dewatering during construction has been submitted to Mr. John Buckley of the Massachusetts Department of Environmental Protection (DEP) for review and approval. The ESDMP provides criteria for characterization, segregation and off-site disposal of potentially contaminated soil in accordance with applicable state and federal regulations. Compliance with MWRA, BWSC and/or EPA permits for discharge of pumped groundwater is also addressed by the ESDMP.

4.0 SOLID WASTES

4.1 Waste Management Plan

The Brigham and Women's Hospital new Clinical Support Facility will utilize existing Waste Management Plans that have been developed. At the present time, Browning Ferris Industries (BFI) is the Hospital's prime waste hauler.

Waste from the Clinical Support Facility falls into three categories: trash, biomedical waste and infectious waste.

Trash from the new facility will be discharged into existing compactors in the Servicenter Building. These compactors are then taken to a transfer station by a licensed contractor where they are emptied. From there the waste is taken to a licensed landfill.

Biomedical Waste will be produced by the services to be housed in the Clinical Support Facility. This waste is already being produced in the facilities that currently house these services. The waste is sterilized in existing on-site facilities then is transported by a licensed carrier to an approved and secured landfill.

Infectious waste that is produced by the services housed in this facility will be sterilized and incinerated in existing on-site facilities. These materials are then disposed of in an approved off-site landfill. This waste is already being produced in the facilities that currently house these services.

4.2 Recycling Plan

The Brigham and Women's Hospital is presently working in a collaborative effort with the Medical Area Services Corporation (MASCO) and Browning Ferris Industries (BFI) to institute a comprehensive recycling program. This is a phased program which began in the Spring of 1991. The first phase concentrated on two areas. The first is the promotion and education of employees and staff to understand and participate in recycling programs. The second is the collection of cardboard and office paper for recycling.

As part of the second phase the Hospital has conducted an audit of other waste products for recycling programs. The Materials Management Department is working with its vendors to reduce waste generation. By eliminating certain types of packaging or by purchasing in different quantities we believe that BWH can significantly reduce the amount of waste disposed of by the Hospital.

The Hospital is also working in a cooperative effort with the Roxbury Tenants of Harvard. This is a multi-phased program that began in January 1991. "Cans for Camp", is the first phase of this effort. Hospital staff, employees and visitors are encouraged to dispose of their cans in specially marked containers. The revenue from the recycling of these cans will go into a fund to pay for neighborhood kids to go to summer camp.

5.0 CONSTRUCTION IMPACTS

5.1 Dust Controls

Dust will be controlled on site by spraying water on disturbed areas until the permanent construction is in place.

5.2 Noise Impacts

Construction equipment will be monitored to insure that it is operating properly and within the acceptable noise levels. The final soil retention system shall be designed so as to minimize any potential noise impacts.

5.3 Construction Staging/Construction Worker Parking

Parking for construction workers will not be allowed on site. Approximately 100 off-site parking spaces will be provided at two locations, 33 Landsdowne St. (approximately 75 spaces) and Back Bay Manor garage (approximately 25 spaces). Workers will be shuttled by bus to these locations.

These spaces will be designated to William A. Berry and Son, Inc. who will be responsible for the collection of funds from the construction workers who use the spaces. In addition, William A. Berry and Son, Inc. will make arrangements such that any construction worker who agrees to commute to the project via public transportation for a full calendar month will be offered an MBTA pass for that month at a discount.

5.4 Construction Schedule

Total construction duration is expected to be approximately 30 months. The anticipated work shift will be from 7:00 AM to 3:30 PM. The number of workers required during the construction period will vary, with an estimated average daily work force of 165 workers during the busiest months and 16 workers during the slowest months, with an average of 95 workers for the construction period.

5.5 Construction Vehicles

At the present time, BWH does not know the geographical distribution of truck deliveries. As a result, a comprehensive plan to handle trucking activity from any direction has been developed. Trucks from the north, northeast, and southeast are expected to exit I-93 at Massachusetts Avenue, arriving at the site via Ruggles Street to Huntington Avenue to Longwood Avenue to Binney Street to Shattuck Street and departing via the same route. Trucks to and from the southwest, west, and northwest are expected to exit I-95/128 at Route 9, arriving at the site via Brookline Avenue to Longwood Avenue to Binney Street to Shattuck Street and departing via the same route. The proposed truck routes as shown in Figure III-25, has been developed to avoid creating impacts on Francis Street. Also, smaller delivery vehicles could use Deaconess Road.

The number of construction trucks during the construction period vary. On average, over the course of the demolition/construction phase, truck volumes of ten to twelve arrivals and ten to twelve departures per workday. The minimum average daily truck deliveries are expected to be 5 deliveries during the slowest months of construction. The highest daily truck volumes are expected during the excavation phase. During this period, daily truck volumes are expected to average 24 arrivals and 24 departures. Assuming an even distribution over an 8-hour day, this translates to approximately 3 arrivals and 3 departures per hour. The traffic impacts of these trips is expected to be negligible.

5.6 Demolition and Asbestos Removal

Removal of existing building will be by conventional means. Cut away from existing buildings will be done with manual labor. Remaining structures will be removed with crane and clamshell. All asbestos shall be removed in accordance with Department of Environmental Protection regulations.

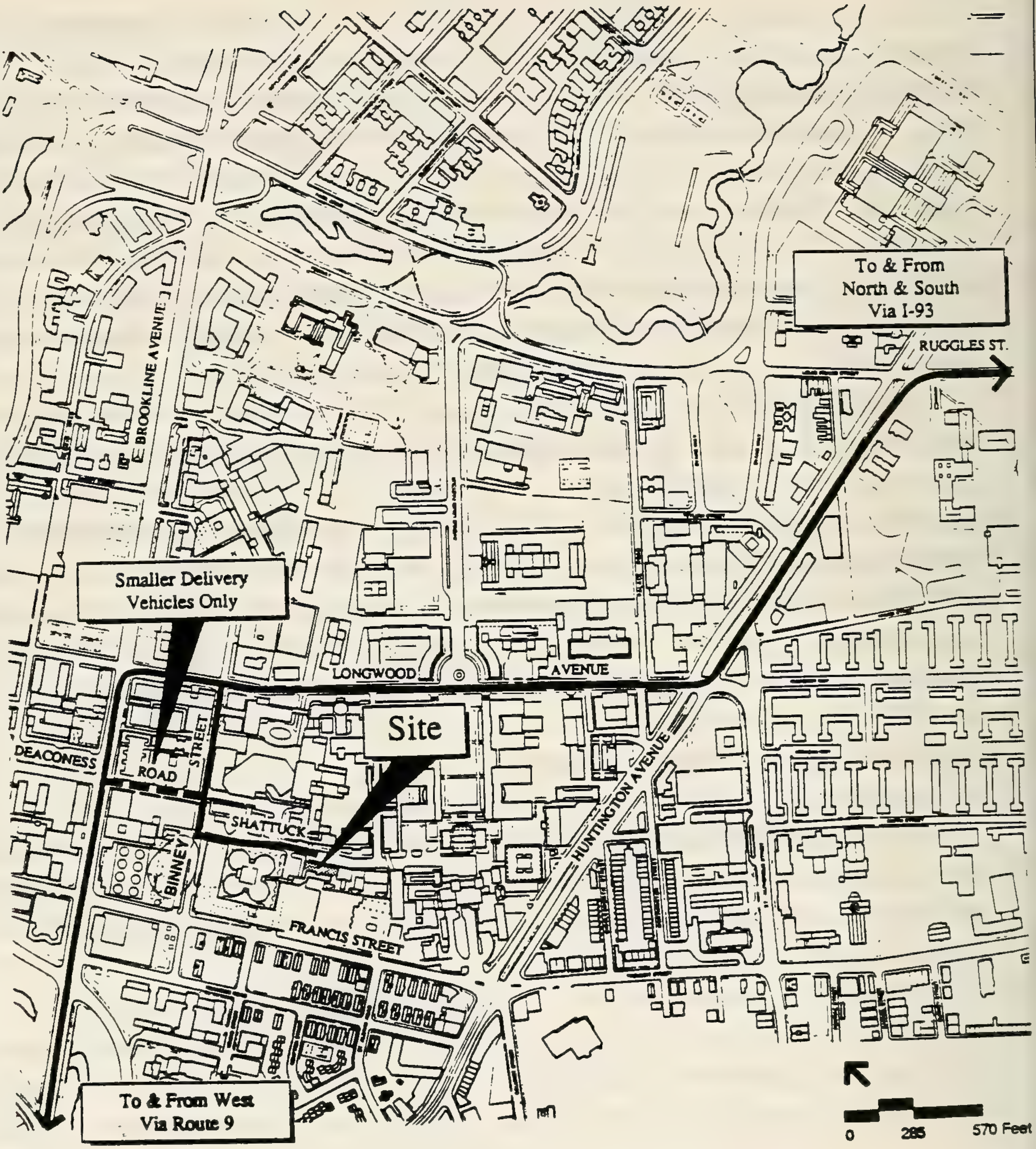


FIGURE III-25
PROPOSED CONSTRUCTION VEHICLE ROUTES
CLINICAL SUPPORT FACILITY

5.7 Measures to Protect Public Safety

The entire site will be enclosed with a fence. Police details will be provided to protect the public and ensure uninterrupted traffic flow. In addition, all work adjacent to the Hospital will be closely coordinated by William A. Berry and Son Inc. to insure that there are no safety hazards to the inhabitants.

6.0 RODENT CONTROL

The existing site is fully developed and, therefore, there is no current rodent problem. Prior to the start of demolition, a rodent control subcontractor service will be retained. This service will be responsible for monitoring the entire construction site and maintaining a rodent free site in accordance with city and state requirements. Based on discussion with Boston's Rodent Control Supervisor in the Inspectional Services Department (ISD), there is no special rodent control protocol to be followed by contractors within the Longwood Medical Area (LMA). ISD responds to complaints and works with management to correct any problems. LMA hospitals handles their own policies based on standard sanitary controls. The City has not recorded any complaints of rodent problems at Brigham and Women's Hospital within the past five years.

BWH

IV. URBAN DESIGN COMPONENT

IV. URBAN DESIGN COMPONENT

1.0 SITE LOCATION

The proposed Clinical Support Facility project is located in the Longwood Medical Area along Shattuck Street, east of Binney Street on the campus of the Brigham and Women's Hospital. The block on which the Clinical Support Facility will be located is bounded by Shattuck Street, Binney Street, Francis Street, and Huntington Avenue (see Figure IV-1). All of the nearby buildings contain hospital or medical area related uses. In addition to Brigham and Women's Hospital uses, nearby buildings are occupied by Childrens's Hospital, Dana Farber Cancer Institute, and Harvard University Medical School. The Medical Area Total Energy Plant (MATEP) is located to the west of the Hospital on the block bounded by Binney Street, Francis Street, and Brookline Avenue.

2.0 PROJECT DESCRIPTION

2.1 Building Program

Brigham and Women's Hospital proposes to construct a 234,000 FAR gross square foot Clinical Support Facility adjacent to its existing Inpatient Bed Tower (see Figure IV-1). The new Clinical Support Facility will replace a 70-year old, 31,000 square foot building to be demolished, for a net new construction of 203,000 FAR gross square feet.

The principal objective of the project will be to provide Obstetrical Support Services and Obstetrical Outpatient Services. Present patient volumes of these functions greatly exceed current facility capabilities. The Hospital's specific program is discussed in the following paragraphs.

- Labor and Delivery

  Annual births at BWH have increased from 6,300 in FY80 to over 10,500 in FY90. Current BWH L&D facilities were designed in the mid-1970's for much lower levels of activity than at present. Current numbers of delivery rooms and overall department support space are significantly below DPH/DON standards.

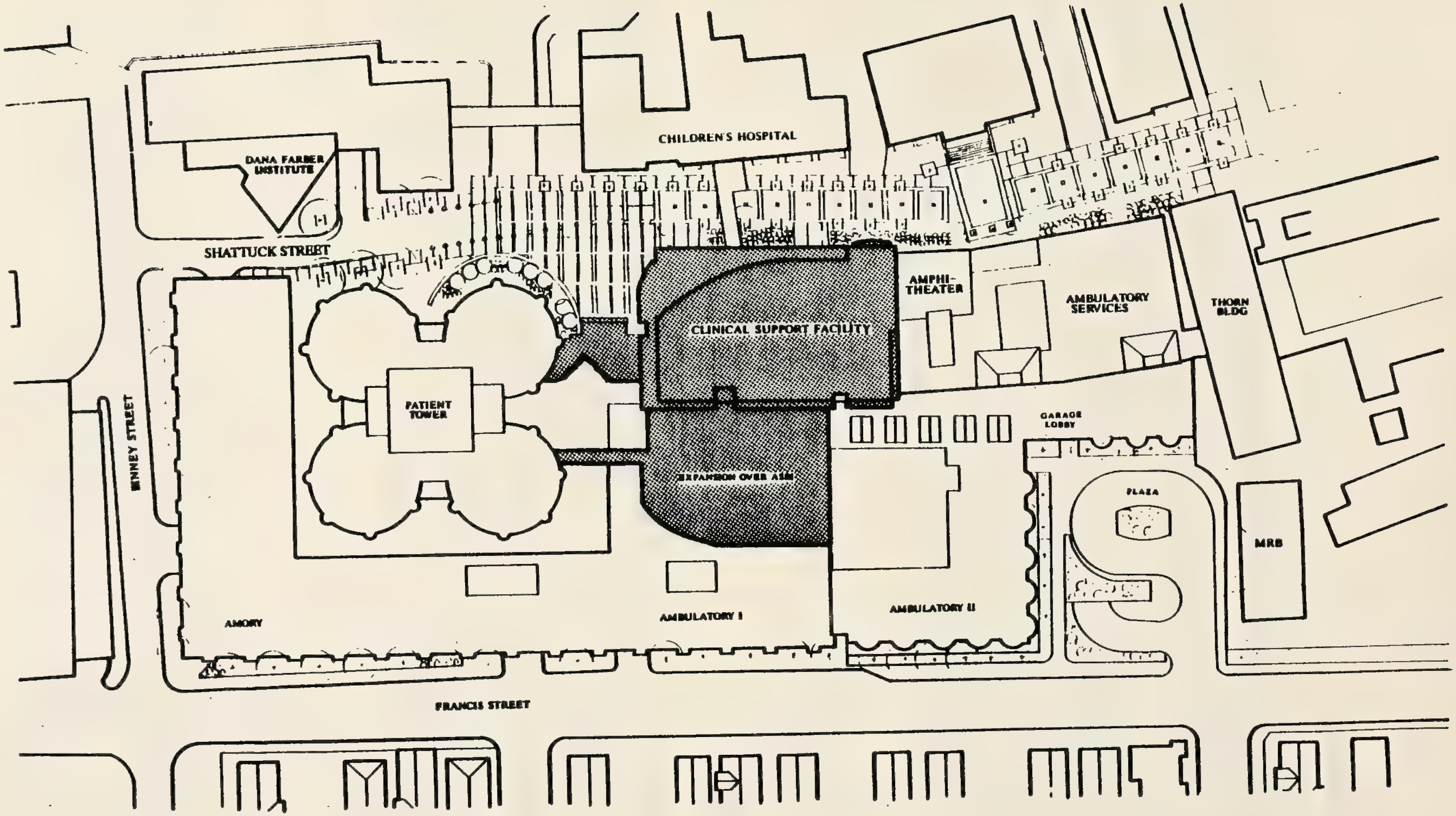


FIGURE IV-1: SITE PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] [illegible]

- Neonatal Intensive Care

  The existing 46-bed BWH NICU has been expanded twice since 1980. Despite these changes, the current NICU has only 267 gross square feet per bed versus the 350-450 GSF per bed existing in other comparable facilities. Deficiencies that cannot be remedied in the present NICU location include deficient storage space, inadequate numbers of breast-feeding rooms, absence of family support space, insufficient space for the entire patient care team to access the baby, and general high levels of noise and congestion.

- In Vitro Fertilization

  The BWH IVF program, established in 1985, has grown from 65 patients to over 300 patients per year. To-date, the program has had to share space in the crowded Labor and Delivery area. A new dedicated, private IVF area with exam rooms, procedure and recovery areas, an IVF laboratory, and offices for physicians, nurses and social workers will be provided in existing areas of the hospital. With adequate facilities, future program volume goals will be 600 patients per year.

- OB Faculty Clinic and OB Faculty Group Practices

  At present, approximately 1/3 of BWH births are provided by BWH full-time faculty, 1/3 by HCHP physicians, and 1/3 by credentialed community practitioners. An increase need for hospital-based faculty to perform deliveries is expected in future years as larger numbers of private physicians elect to practice GYN only and as younger private obstetricians limit OB workloads for life-style and economic reasons. BWH plans to meet this greater need for hospital-based physician services through an expansion of its Faculty OB Clinic and through formation of several new four-person faculty groups concentrating on routing obstetrical services. Two of these latter groups have been established in the past two years, with all newly recruited members agreeing also to provide staffing part-time to neighborhood health centers. The proposed project will provide space for this continued expansion of hospital-based outpatient services.

- Antenatal Diagnostic Center

The project will also allow establishment of a comprehensive, "one-stop" antenatal diagnostic center for high risk obstetrical patients. Services of this center will include cytogenetics, genetics counseling, ultrasounds, amniocentesis, AFP testing, PUBS, CVS, fetal monitoring, and prenatal consultations. At present, these diagnostic support services are limited in size due to lack of space, and must be provided in multiple, fragmented locations throughout the Hospital. Recent volume increases have also been substantial. The new, consolidated diagnostic center will make it much easier for patients and referring physicians to access these services, and will facilitate comprehensive, coordinated consultations and evaluations.

- Support Space for Patients, Families and Special High Risk Populations

Within all of the above OB support services, the project will remedy present greatly inadequate support space for patients, families, and special high risk populations (e.g. adolescents).

A secondary objective of the project will be to provide replacement space for existing functions in the deficient 70-year old Tackaberry Building (to be demolished), as well as additional space for some other hospital support functions:

Tackaberry Replacement Space:

- ER Administration
- EMT Lounge
- Telecommunications
- Pathology Administration
- Cytology
- Operations Conference Room

Additional Support Space:

- Non-Invasive Cardiology
- House Staff Study/Lockers/
  On-Call Rooms
- Anesthesia Offices
- Biomedical Engineering
- Bed Park/Repair
- E.R. Security

- ER Administration: Administrative offices for existing emergency room.

- EMT Lounge: Locker and lounge space for Emergency Medical Technicians based at the hospital.

- Telecommunications: Relocation of the hospital's operator switchboards.

- Operations Conference Room: A large conference room assigned to BWH Administrative Departments.

- Non-Invasive Cardiology: This service provides echocardiogram, electrocardiogram and other cardiac testing services throughout the hospital, as well as receiving outpatient visitors. The volume of procedures performed by the department has approximately doubled from 1983 to 1988 with no expansion of the department's physical space.

- House Staff Support Areas: Provisions for on-call rooms, lockers, library and conference areas for BWH medical staff to alleviate shortage of these support areas existing since the initial design of the BWH Tower Building.

- Anesthesia Offices: The current department of Anesthesia Offices are poorly located in an area of the L2 basement floor level dedicated to kitchen, linen and other service functions. The department will be vacated to permit a relocation of the Housekeeping Department to this area and also to improve crowded office conditions.

- Biomedical Engineering: The Department of Biomedical Engineering maintains medical equipment used throughout the Hospital. This department is currently located in inefficient quarters, remote from the Tower Building which houses most of the medical equipment on campus.

- Bed Park and Repair: Storage space will be provided for unused beds and equipment in need of repair. The hospital currently lacks storage for these beds.

  (See Table IV-1 for detailed breakdown of Clinical Support Facility Building Program Report by Department.)

The BWH building to be demolished (Tackaberry) has reached the end of its useful life. Deficiencies of this building were documented in the Hospital's September 1, 1989 DON application.

2.2 Phased Construction

The proposed new Clinical Support Facility at BWH has previously been envisioned as a two-phase building with the potential for several floors of future vertical expansion to be constructed at a later date. After further study and consideration, BWH intends to build four floors above the expected DON-approved uses in the new building. This space will be fit out in subsequent phases.

There are two reasons for proceeding with the Clinical Support Facility as planned rather than to wait for the second phase vertical expansion at a later date:

1) Planning studies have indicated that no site other than the new Clinical Support Facility exists on the BWH campus where future incremental square footage could be constructed in proximity to the Tower and to other clinical programs. The Clinical Support Facility represents the most feasible addition to accommodate any significant future facilities expansion at the Hospital.

TABLE IV-1
BRIGHAM AND WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY
BUILDING PROGRAM REPORT

Department	Program DGSF	Plan DGSF
Labor and Delivery	30,559	33,562
NICU	18,968	17,475
OB Clinic/Faculty Group Practices	10,840	15,634
OB Reception/Waiting	0	1,520
OB Faculty Offices	2,930	2,140
HCHP OB Offices	1,200	1,000
Non-Invasive Cardiology	5,000	5,712
Anesthesiology Faculty Offices	13,000	11,881
Physician Support Area	11,000	10,984
E.R. Administration	2,100	3,288
E.R. Security	100	118
EMT Lounge/Lockers	700	458
Biomedical Engineering	4,000	1,064
Telephone Switchboards	4,000	3,804
Bedpark/Repair	600	900
Transport Services	800	760
TOTALS	105,797	110,300

2) Design reviews have concluded that to provide sufficient floorplate size for a Labor and Delivery Neonatal Intensive Care facilities, the new L&D floor be constructed on no lower elevation than the Fourth Level of the proposed Clinical Support Facility and the NICU above. With the new L&D facility located on this upper level, it would not be possible at a later date to construct a second phase vertical expansion without disrupting vital ongoing NICU and L&D services. The upper level L&D and NICU locations are also highly desirable to provide natural light for examination of babies and for patient comfort.

2.3 Original ENF/Initial Project Change

In the Environmental Notification Form (ENF), Brigham and Women's Hospital proposed to construct a 181,782 g.s.f., eight-story Clinical Support Facility to primarily house obstetrical services, including a labor and delivery unit, a neonatal intensive care unit, ancillary offices and support staff areas, and an in-house hotel for the families of patients. The majority of these services are already located elsewhere on campus in facilities of insufficient size to accommodate present and anticipated demand. The Clinical Support Facility would replace the 31,000 gross square foot Tackaberry Building, which is currently located on the site.

The ENF proposed a replacement of the elevated walkway bridge to connect the Clinical Support Facility at Level 2 to The Children's Hospital Medical Center across Shattuck Street. In addition, a connecting bridge will join the new building to the adjacent BWH Patient Tower.

Construction is expected to commence in June, 1991 and to be completed by late 1993.

In its ongoing program assessment, BWH determined the need for additional space for medical faculty offices. These are now located in overcrowded spaces in other locations within the BWH campus, and are needed to accommodate new doctors and staff members that BWH expects to attract. Therefore, the Hospital proposed one additional floor (approximately 21,000 g.s.f.) to the proposed Clinical Support Facility. This would increase the total area to 202,700 g.s.f., and increase the building height to nine stories (approximately 138 feet). Because of this revision, the initial project change notification was submitted to MEPA on May 10, 1990.

2.4 Revised Project Change

BWH has now completed its schematic building design and an initial space needs determination for each of the programs which will occupy the Clinical Support Facility. Major external inputs to this further program refinement have included discussions with licensure staff at the Division of Health Care Quality at DPH regarding the adequacy of proposed space for Obstetrical and NICU services, discussions with the Mayor's Task Force on Infant Mortality regarding additional planned resource commitments by BWH for community obstetrical services, and discussions with the DON Office regarding acceptable changes within the initial DON submission. The primary outcome of these discussions has been the filing of a revised DON plan for a larger building consisting of two components:

1. 165,000 square feet of clinical space subject to DON approval at this time.

2. An additional 86,000 square feet of space (Floors 6-9) which would be constructed initially as shell space and to be finished at a later date.

For financial reasons, some consideration has also been given to the possibility of simply foregoing construction of Floors 6-9 at this time and to completing these floors at a later date as part of a second phase expansion. However, after further study, BWH has determined that there are two reasons for adding the shell space floors at this time:

1. Planning studies have indicated that no site other than the present Tackaberry Building exists on the BWH campus where future incremental square footage could be constructed in proximity to the Tower and to existing clinical programs. The Tackaberry site thus represents the most feasible location to continue to accommodate future facility needs at the hospital.

2. Design reviews have concluded that to provide sufficient floorplate size for adequate Labor and Delivery and Neonatal Intensive Care facilities, per DPH standards, the new L&D floor must be constructed on no lower elevation than the Fourth Level of the proposed new Clinical Support Facility with the NICU above. With the new L&D and NICU facilities located on these upper levels, it would not be possible at a later date to construct a second phase vertical expansion without disrupting vital on-going obstetrical services. The upper level L&D and NICU locations are also highly desirable to provide natural light for the examination of babies and for patient comfort.

The increase in the building's gross square footage has accommodated significant increases in areas allocated to engineering systems. Through the Schematic Design Review period since June, 1990, the mechanical shaft areas have increased, particularly on Floors 6-9. Linen and trash disposal chutes have been added to the program, and electrical and telephone spaces have increased. Mechanical and electrical service areas at L2 and the Penthouse have increased appreciably as the design requirements have been clarified.

The increase in area dedicated to engineering systems (Structural, Mechanical, and Electrical), utility areas, and the inclusion of the ambulance court has significantly impacted the building's gross square footage areas. These areas are required for building services that are in addition to the departmental program and building circulation areas. Building FAR square footage, or usable area, will exclude these non-habitable areas dedicated to mechanical and electrical services, and utility spaces.

The Clinical Support Facility's program and total staff estimates remain unchanged from those described in the May 10, 1990 letter regarding the initial project change (see Table IV-2, which follows). In addition, the majority of the floor area increase has occurred within the following areas:

a) In the building, with a provision for a mezzanine and an intermediate floor.

b) Over the adjacent BWH Ambulatory Services Building's (ASB-1) roof, at Level Four of the CSF.

TABLE IV-2
BRIGHAM AND WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY
PROJECT CHANGES

Floor Level	Initial Project Change (May 10, 1990)	Revised Project Change (February 15, 1991)
Penthouse	Mechanical	Mechanical Equipment
Level 9	Hotel	Initial Shell Space
Level 8	Research Faculty Offices	Initial Shell Space
Level 7	Research Faculty Offices	Initial Shell Space
Level 6	Research Faculty Offices	Initial Shell Space
Level 5	Neonatal Intensive Care Unit	Neonatal Intensive Care Unit
Level 4	Labor and Delivery	Labor and Delivery OB Triage and Admitting
Level 3/4	---	Obstetrical Faculty/Lockers/ On-Call
Level 3	OB Services	Obstetrical Clinic Expansion, Antenatal Diagnostic Clinic, In Vitro Fertilization
Main Floor	Administration House Staff Areas	Administration House Staff Areas Dining
Ground Floor Level	Emergency Room Administration OB Triage and Administration	Emergency Department Administration EMT Lounge/Ambulance Drop-Off
L1/M	---	Anesthesiology Faculty Offices
Level 1	Non-Invasive Cardiology Telecommunications	Non-Invasive Cardiology Telecommunications Respiratory Therapy/Pulmonary
Level 2	Biomedical Engineering/ Mechanical	BiomedicalEngineering/ Mechanical Bed Park and Repair

As indicated previously, the increase of approximately 55,000 GSF is in response to various factors developed during the schematic design:

a) DPH informal review of proposed Labor and Delivery and NICU design, with resultant increases in family and support space.

b) Added outpatient obstetrical space in anticipation of additional community service commitments.

c) Additional programmatic requirements identified within the below grade L1 level.

d) Structural design requirements.

e) Additional mechanical area required to accommodate increased equipment sizes of the HVAC system, chosen after careful consideration by the Hospital.

Specifically, most program area increases occur at:

a) Level L1 Intermediate Floor (7,500 g.s.f.). This area is required to provide additional flexibility to accommodate long-range planning needs for the clinical services on Level L1. This basement level in the existing Tower Building contains the Surgery and Radiology departments and is entirely below grade. The Clinical Support Facility will provide the last opportunity for future expansion of these critical departments.

b) An intermediate floor has been added between levels 3 and 4 (12,500 square feet) to meet DPH and planning support space standards for the L&D and the NICU. This interfloor was made possible by raising the 4th floor of the Clinical Support Facility to align with the 5th floor of the existing Patient Tower, providing a level connection between the Labor and Delivery Department and the existing Postpartum beds in the Tower. This new floor provided staff support areas associated with the NICU and the Level 4 Labor and Delivery Suite.

c) Additional 4th floor expansion located on the roof of the existing Ambulatory Services Building I (7,000 g.s.f.) to accommodate the Obstetrical Triage area originally proposed for the ground floor. This appendage to the Clinical Support Facility also provides additional program area for the Labor and Delivery Suite.

d) Floors 6-9 increase approximately 5,000 g.s.f. due to the coordination of structural design requirements with the planning on lower levels. Floors 2 through 9 must cantilever significant distances in the south and west directions over existing, abutting buildings. The footprint of floor 5 has been carried through floors 6-9 to provide a moment frame system to achieve these cantilevers and sufficient vertical planes for lateral bracing to resist wind loads.

e) Additional Penthouse area (10,000 g.s.f.) to accommodate air handling units and ductwork required by the HVAC system and electrical service areas.

f) Miscellaneous design refinements on other floors (5,500 g.s.f.).

g) 7,500 g.s.f. of ambulance court is provided on the ground floor level. This area is dedicated ambulance space to upgrade existing ambulance service at the Hospital and meet current regulations and agency requirements.

The height of the Clinical Support Facility relates primarily to four factors:

a) The Labor and Delivery floor (4) has been raised to align with the 5th floor of the existing patient tower (7'-0"±) to provide a level connection to the existing Postpartum bed floors in the Tower.

b) Floor-to-floor heights at floors 4 through 9 increased 1'-0" to accommodate duct sizes associated with the HVAC system.

c) The roof of the Mechanical Penthouse has been raised to accommodate equipment sizes and associated ductwork required by the HVAC system.

d) Several floors have minor increases in floor-to-floor heights to accommodate structural and mechanical distribution system requirements.

During FY89, BWH was the leading provider of high-risk obstetrical services in the communities of Dorchester and Roxbury:

TOTAL BIRTHS - FY89
BY HOSPITAL

	BWH	Boston City	St. Margaret's	Beth Israel
Dorchester				
- North	695	738	738	398
- South	792	798	488	487
Roxbury	722	412	95	332
TOTAL	2,209	1,948	1,321	1,217

During this same period, BWH provided over one-third of all of the neighborhood health center-related deliveries in the City of Boston.

With the intended relocation of St. Margaret's Hospital to Brighton, the future unmet needs of the present service area of St. Margaret's will place increased obstetrical service demands on BWH from these neighborhoods. As part of the Mayor's efforts to decrease black infant mortality in Boston, BWH has also made the most extensive increased service commitment of any hospital in the City to its affiliated health centers. The proposed BWH Clinical Support Facility will provide the capacity and capability at BWH to meet these commitments.

2.5 Building Design

The Clinical Support Facility Project has been developed to strengthen the urban design character of the Brigham and Women's campus and enhance the relationship among the various buildings which now exist at the site and in the surrounding area. The building has been sited along the main pedestrian link through the campus. This linear connector known as the "Pike" extends from Brigham Green to the Tower and unites the entire campus for staff and visitor circulation and systems distribution. A new node along the Pike will be formed at the main and ground floor lobbies of the Clinical Support Facility building where the elevators serving the new building will be located.

The exterior expression of the Clinical Support Facility is the result of a combination of both internal and external forces; a sophisticated structural system, and a variety of planning modules which respond to the building's program within the existing context. Within the existing context a diversity of surrounding buildings offer a range of material, scale and proportion to respond to the design.

The design concept for the Clinical Support Facility expresses two basic elements of different character, a masonry or precast concrete shell at the North and East, and a lightweight curtain wall system at the South and West. The North and East facades of the Clinical Support Facility are an expression of the qualities of the masonry skin. This element's material has been designed as a beige-pigmented, precast concrete panel. The South and West elevations express the light, more delicate nature of a curtain wall system, which appears to be hung from its masonry counterpart.

The West and South facades have been clad with a curtain wall system. This system incorporates glass, both translucent and opaque, a metal infill panel, and a masonry panel, all contained within an aluminum frame. This combination of materials allows for a rich level of articulation and detail in the proportioning of the elements, as well as an opportunity to reduce the apparent scale of the building.

The curtain wall expression of the South facade turns the corner at the West elevation. Like the South, the massing of the West facade fragments the curtain wall into two vertical elements which assimilate the proportions of the adjacent Tower Pods. These elements are suspended three stories above the street level, identifying the cantilevered structure occurring behind the facade. The base expression at the North reoccurs below the suspended curtain wall at the West facade. The curvilinear geometry of the Tower is also suggested within the curtain wall system of the West elevation, as it terminates itself by subtly curving into the masonry of the North elevation.

In addition to the structural system, the planning modules as defined by the building's program add complexity to the exterior expression. At the Labor and Delivery suite on Level Four, the design is based on a fourteen foot module. At Level Five, however, the Neonatal Intensive Care Unit requires a nineteen foot planning module. The remaining floors are providing decompression space for the campus, and require yet another planning grid which is less specific and, therefore, requires more flexibility for a variety of needs.

This diversity of program requires a skin which can accept demising walls from the various planning modules, while allowing for light and views. At the same time, the building's envelope must be expressive of an external order which serves to unite these various internal conditions.

The existing context provides a diversity in building types, materials, scales and proportions. This complexity is represented in the envelope of the Clinical Support Facility through a variety of direct and subtle responses which aid in determining the character of the building's skin.

A conventional hierarchy determines the Clinical Support Facility's exterior order, clearly defining the base, middle and top zones of the building. This device serves to reduce the apparent scale of the building, and allows the opportunity to proportion each particular zone of the facade.

The base is most prominently displayed along Shattuck Street, at the North facade. The height of the base aligns itself with the parapet at the existing Amphitheater and Old Surgery building to the East, and the Amory building and Tower Connector to the West. The base element has been articulated as a three story arcade in response to the pedestrian scale of the street. It is further defined by a change in material, both color and texture. Openings for vehicular traffic occur within the arcade expression, which serve the ambulance court on the Ground Floor Level.

The middle zone of the North facade has a masonry skin with appropriately proportioned zones of window openings. These voids have been infilled with the same curtain wall system utilized on the South and West facades. A horizontal band of masonry exists at the floor plane of Level Six. This element acts as a datum line on the building's exterior, defining a change in program within the structure, while responding to the existing building heights on the North side of Shattuck Street.

The masonry penthouse represents the top of the composition. This element is setback from the face of the building on Shattuck Street, and gradually curves to the West, referencing the existing curvilinear geometry of the Tower Pods.

On the East corner of the North facade, a five story bay expression unites the middle zone of the building with its base. This bowed form is clad with the typical curtain wall system, reminiscent of the South and West facades.

The East elevation continues the aesthetic expression of the North; a predominant masonry skin with curtain wall infills at the window openings. The base element is concealed, however, as the East facade abuts the existing Amphitheater Building.

The Clinical Support Facility has varied and somewhat restricted sightlines from the South. As one travels down Francis Street from the West, the building is almost completely obscured from view by the existing Patient Tower. The view of the Clinical Support Facility is blocked by the Thorn Building and MRB from the East until one reaches the ASB II courtyard at mid campus. From this point, the upper five stories of the CSF are partially visable, with the adjacent ASB I and II buildings engaging its base.

The massing of the South facade has been organized into three elements, representing a progression in size from East to West. This massing reduces the apparent length of the building, while reproportioning the facade into smaller, more vertical masses. These elements assimilate the proportions of the existing context visable from Francis Street; ASB I and II bay projections, the Patient Tower Pods, and the vertical proportioning of the Thorn Building.

2.6 Pedestrian Access and Urban Design Issues

The "Tackaberry Pedestrian Connector," more recently referred to as the "Shattuck Street Link," was conceived of as a pedestrian connection from Shattuck Street through the Clinical Support Facility to the ASB II Lobby and courtyard on Francis Street. This proposal would require pedestrians to make a level change within the Clinical Support Facility; from the ground floor level at Shattuck Street up to the main floor level, in order to arrive at the ASB II lobby and courtyard. The required route would be circuitous, through the two buildings and between the two floor levels, and would require a more complex security strategy than is presently desired.

After studying the proposed concept, Brigham and Women's Hospital concluded that this link would be more appropriately located at the exterior courtyard between the Clinical Support Facility and the existing Patient Tower (see Figure IV-2). The exterior courtyard will serve as a transitional space from the pedestrian mall on Shattuck Street to

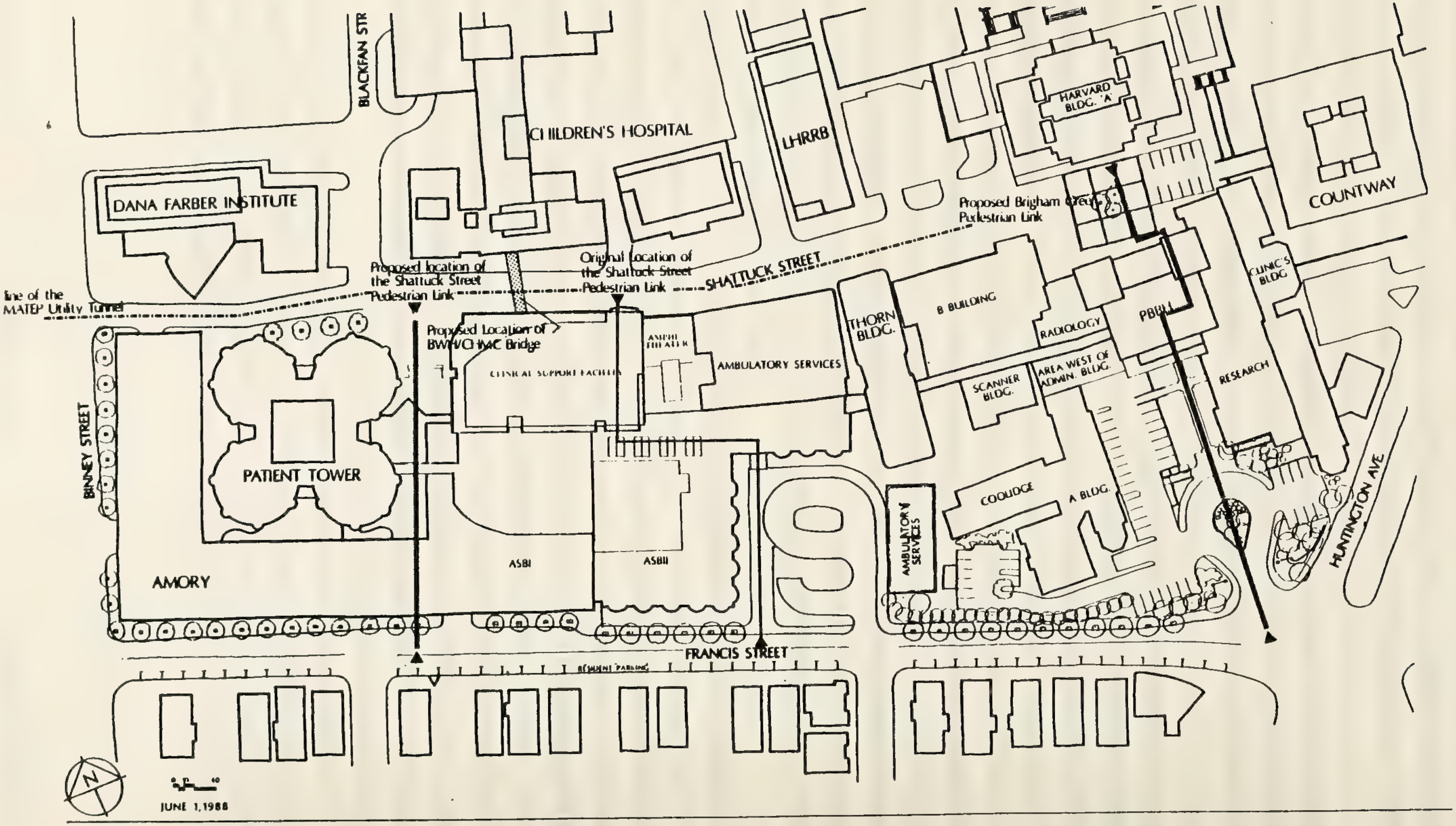


FIGURE IV-2: CAMPUS PLAN

BRIGHAM AND WOMEN'S HOSPITAL

TSOI/KOBUS & ASSOCIATES ARCHITECTS

CAMBRIDGE, MA.

the Tower Lobby and will provide direct access through the lobby to the hospital's main entrance on Francis Street. During periods of good weather the courtyard will be an enjoyable place for eating and socializing; it will be further defined through the use of concrete pavers and landscaping that will extend, to the north, across Shattuck Street. The landscaping will visually unite the two sides of the street, soften the courtyard space, as well as mitigate surface winds on the site. Planned landscaping includes one row of trees along the curbline, with ground cover and low plantings at the building's base. Specimen trees will mark the East and West edges of the site.

Combining the Shattuck Street Pedestrian Link (see Figure IV-3) with the exterior courtyard is an alternative that would be functionally sound; it would offer a clear and distinct entry, require no floor to floor change for pedestrians and would allow for a centrally located security point.

The "Shattuck Street Connection" to Children's Hospital is currently accessed from the Main Pike at Brigham and Women's Hospital. This bridge, spanning Shattuck Street, acts as a link for pedestrian traffic, as well as stretcher and wheelchair traffic generated by the joint programs of these institutions. As part of the Clinical Support Facility Project, a replacement bridge is proposed. The bridge complies with the Handicapped Code for accessibility and maintains an acceptable clearance height at Shattuck Street, as recommended by the Fire Department.

The proposed bridge will be accessed from the Main Floor Level of the Clinical Support Facility. This element will project perpendicularly to the face of the building and will remain level as it spans the width of Shattuck Street to Children's Hospital. Acting as a threshold, the bridge will define the service zones on the East Campus from the more public areas to the West.

The possibility of a Below-Grade Alternative has been considered and does not appear to be a feasible solution for several reasons. The existing MATEP tunnel, carrying utility mains that service the entire Longwood Medical Community, is located beneath Shattuck Street; the expense of its relocation or alteration would be beyond reason, and therefore, was deemed unacceptable to both Children's Hospital and Brigham and Women's Hospital. Also, located on the Ground Floor Level of the Children's Farley Bader building, the likely port for a below-grade connector is the mechanical equipment room for that building. In the event that a below-grade solution is pursued, the expense of relocating this equipment would be higher than acceptable.

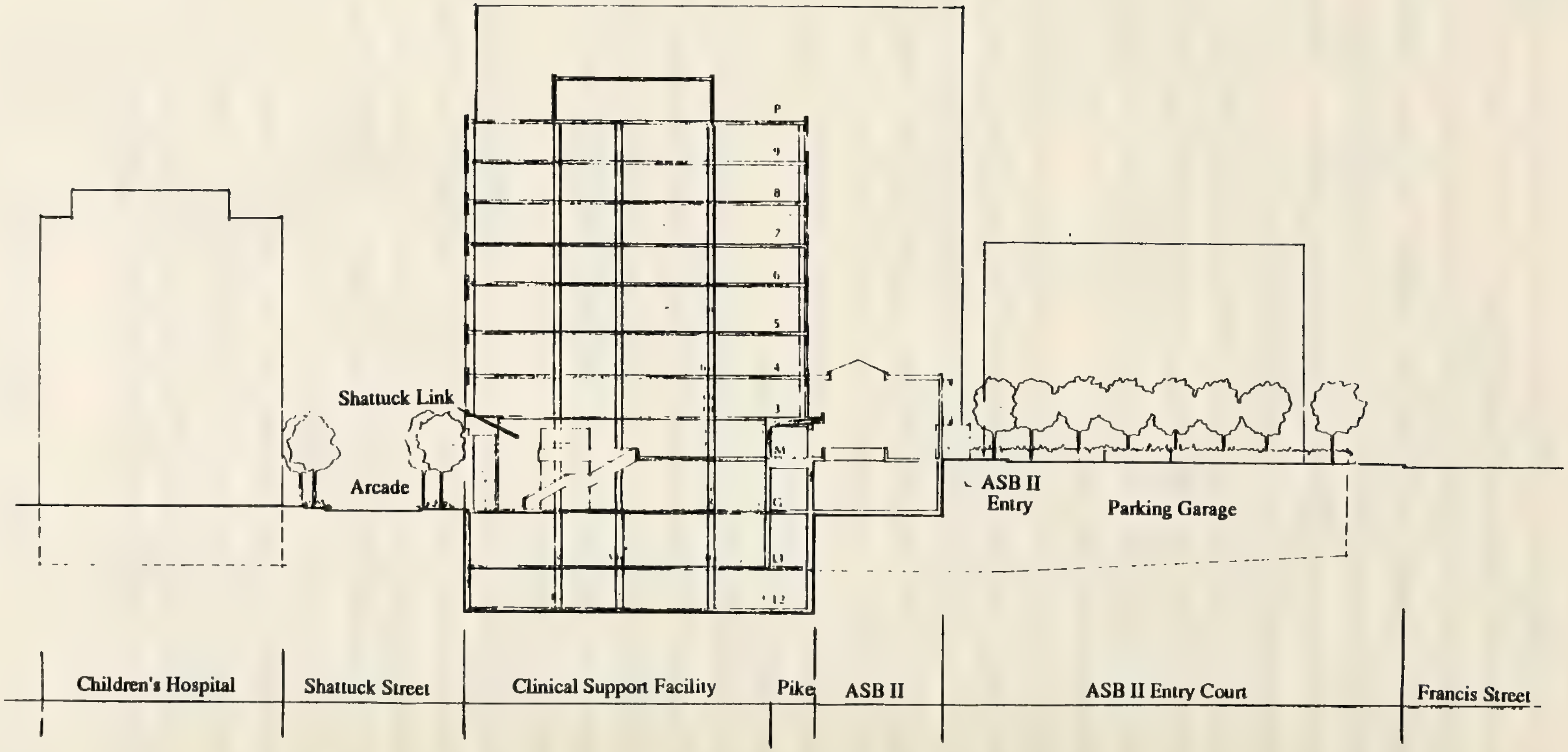


FIGURE IV-3: SHATTUCK PEDESTRIAN LINK CROSS SECTION LOOKING WEST

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

Tsoi Kobus & Associates • Architects

2.7 Brigham Green

The Hospital reaffirms its support for a project to improve Brigham Green. Based on the Hospital's planning studies it believes that the best approach to this project is a plan that includes approximately 10,000 square feet for below-grade food court/retail space (see Figure IV-4). As agreed to by the Hospital and the BRA, this additional 10,000 square feet would not be included in the same PDA amendment as the CSF. The Brigham Green project will be pursued by the Hospital in the future as a separate project. Language generally describing this future project has been submitted to the BRA to be added to the master plan.

In addition to the food court, the project also incorporates landscape and pedestrian improvements. These improvements include tree and lawn planting, wall and fence redesign and construction, reduction in the amount of surface parking, restoration of the main portico, new paving and exterior lighting, and street furniture.

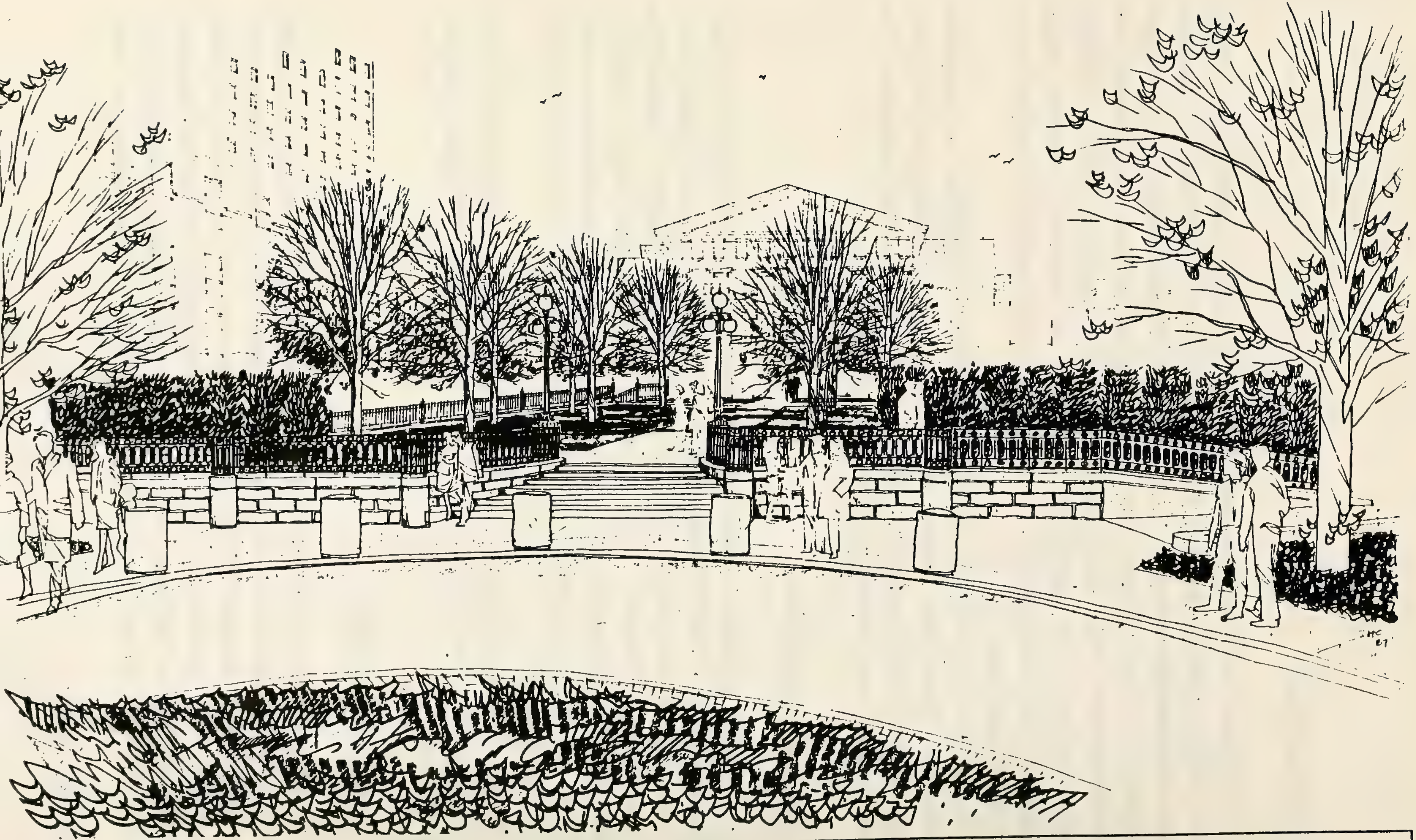
2.8 Other On-Campus Projects

Brigham and Women's Hospital is committed to the future development of a formal north-south pedestrian connector through the campus at the proposed Brigham Green. The pedestrian link would accept traffic from Francis Street, through the renovated Old Peter Bent Brigham Hospital Lobby, and would allow pedestrian access through to Shattuck Street on the North side of the building. By using a well marked corridor system, appropriate signage would identify this linkage at each entry point and along the connecting corridor.

The Hospital also proposes to relocate the cafeteria that is presently located in the north side of the Old Peter Bent Brigham Hospital, as well as restore its north facade and patio area.

2.9 Tower Lobby Expansion

One major objective of Brigham and Women's Hospital is to redesign the hospital's main entry lobby. The current proposal calls for an expansion of the existing Tower Lobby to the South, and a relocation of the entry doors on axis with this space. The lobby proposal calls for the demolition of the existing one story curvilinear forms at the base of the patient tower, and in their place, construction of a concourse gallery space that will run parallel to the drop off court along Francis Street. This two story volume will allow



BRIGHAM
AND
WOMEN'S
HOSPITAL

FIGURE IV-4: BRIGHAM GREEN

Brigham Green

Tsoi/Kobus & Associates, Architects
Copley Fleming Associates, Landscape Consultants

for several points of entry along its length, and will house the more public functions associated with the lobby; the gift shop, food service and Chapel areas.

The entry court itself will be renovated as part of this work. The vehicular zones are planned for three lanes of traffic, two for temporary car stacking and one as a pass-by lane. Short term and handicapped parking will be provided for in this area. The majority of the drop-off court's pedestrian and vehicular zones will be finished with concrete pavers, a coffered ceiling plane, and landscaping to soften the space.

The Tower Lobby will be extended to the north to strengthen the connection through the campus from Shattuck Street to the hospital's main entry on Francis Street. A second level balcony will overlook the exterior courtyard, adding to the vitality of both interior and exterior spaces. The image of Brigham and Women's Hospital will be strengthened by the creation of an identifiable entry point for the public and staff on Francis Street.

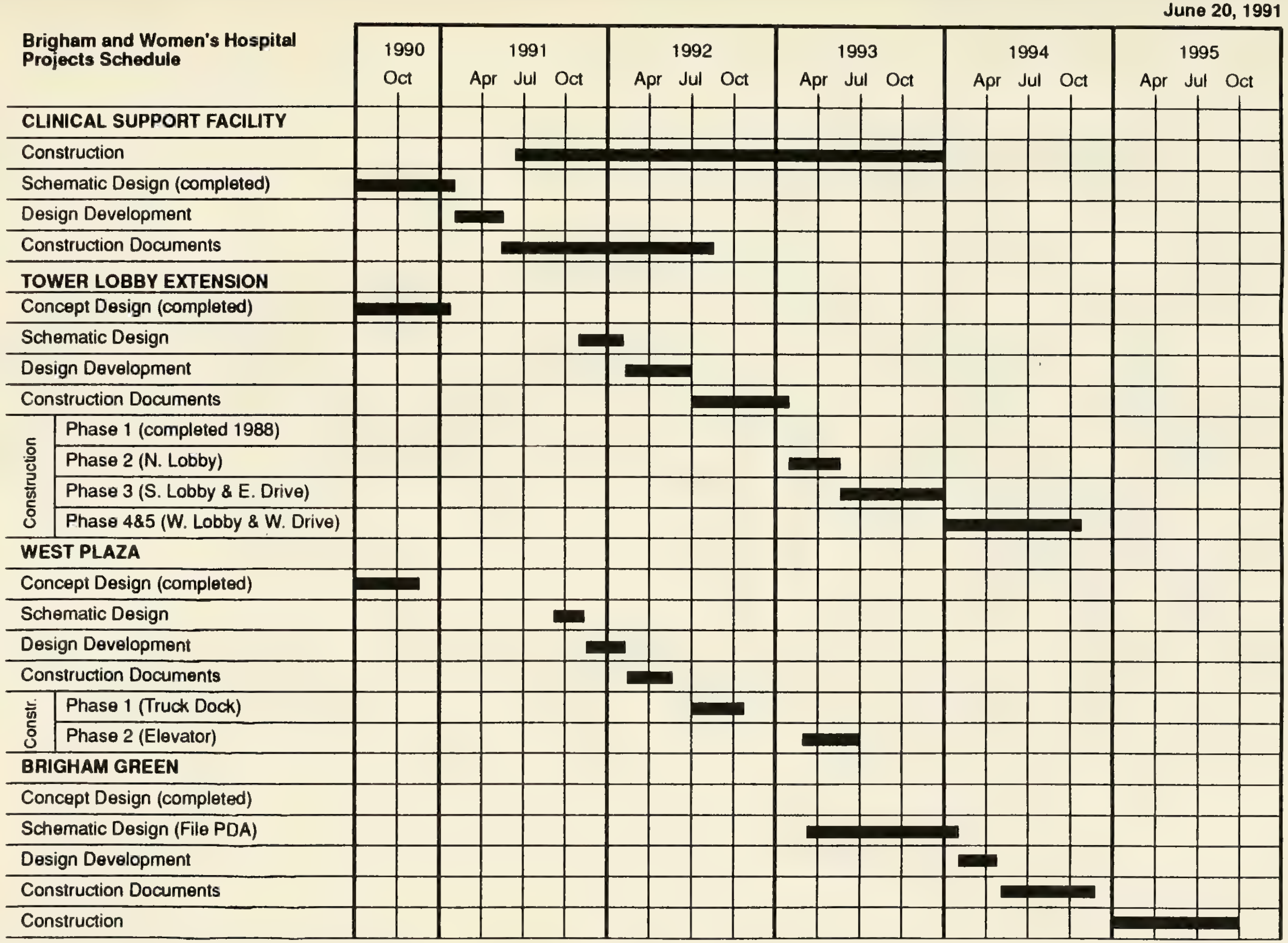
The exterior courtyard adjacent to the Tower Lobby is intended to provide a pedestrian scaled environment between the lobby entrance and the Shattuck Street corridor. The plaza will be paved with a grid pattern of decorative paving that is integrated with the Tower Lobby pattern and it is intended to visually tie the exterior spaces with the interior spaces. A series of pedestrian benches, bollards and light poles will also be visually compatible with the new Tower Lobby. Additionally, the lower base of the existing Patient Tower will be modified slightly with a lattice type screen for climbing vines. This lattice type screening will also be repeated on the base of the CSF tower, thereby integrating the CSF and Tower Lobby with the existing Patient Tower. The base of the Patient Tower will also be softened with a series of planters containing evergreen and flowering deciduous plant material. The Shattuck Street edge to the new Tower Lobby Courtyard will be lined with street trees, approximately 25 feet on center.

A discharge lobby is currently proposed at the west core of the patient tower. Parking will be provided for discharge patients and their families.

The proposed West Plaza Receiving Area is located at the northwest corner of the campus, below the Amory Building. This area will provide for the deliveries to the hospital which currently add to the congestion of the drop-off court at the existing main entry. The receiving area will be used for house services during off hours.

2.10 Project Schedule

Brigham and Women's Hospital Projects Schedule, as shown on Table IV-3, outlines the anticipated schedules for The Clinical Support Facility, The Tower Lobby Extension, The West Plaza and The Brigham Green projects.



5185

TABLE IV-3
BRIGHAM & WOMEN'S HOSPITAL
PROJECTS SCHEDULE

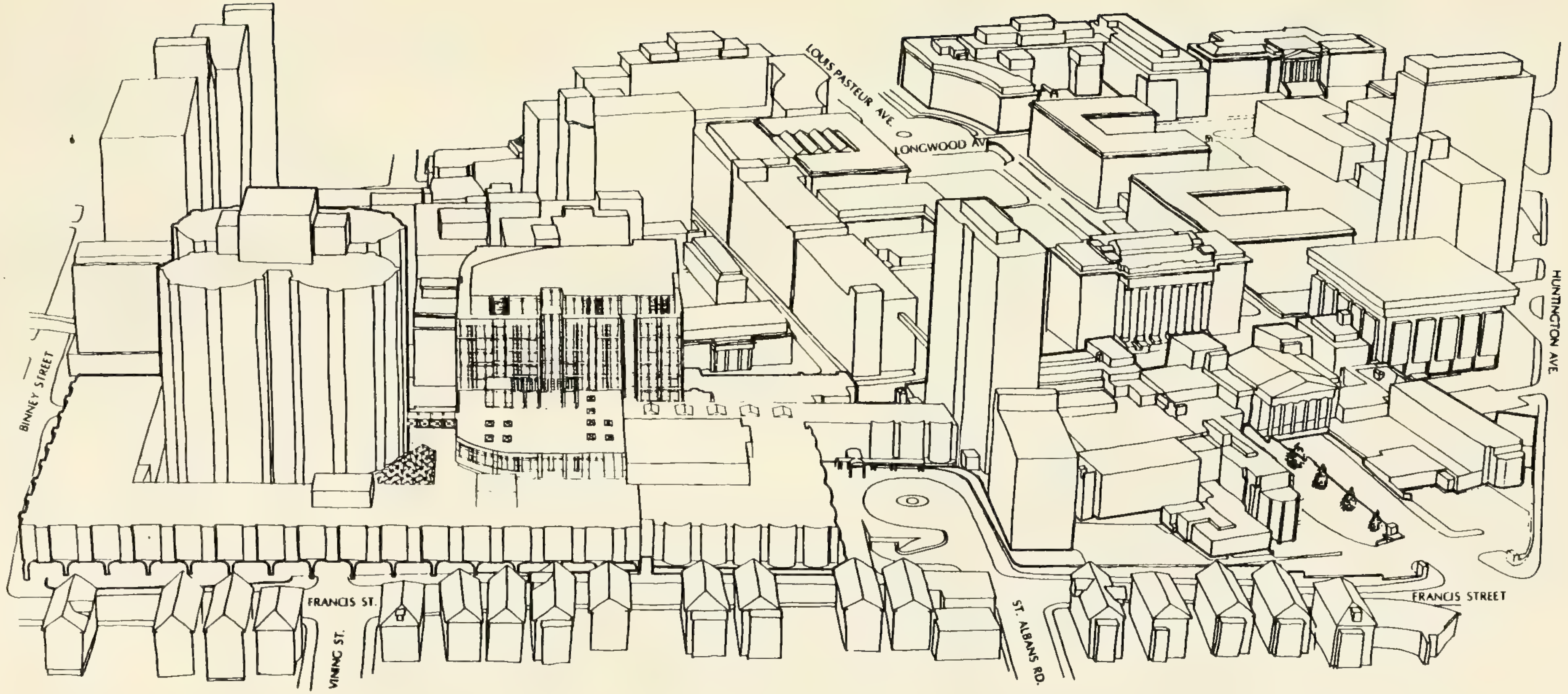


FIGURE IV-5: AERIAL VIEW LOOKING NORTH

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY
TSOI / KOBUS & ASSOCIATES ARCHITECTS
SCHEMATIC DESIGN [illegible] 11 JANUARY 1991

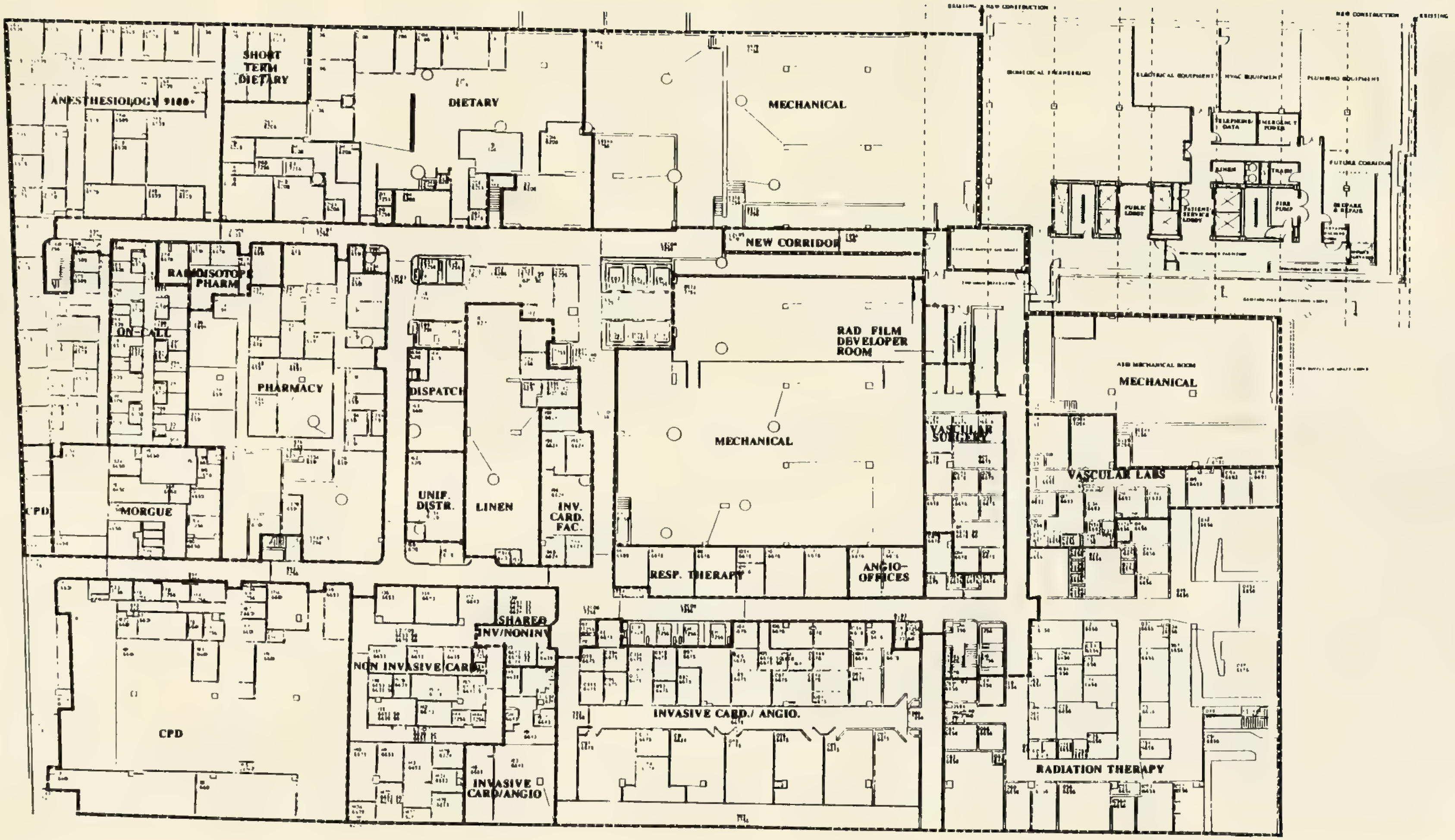


FIGURE IV-6: L2 LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

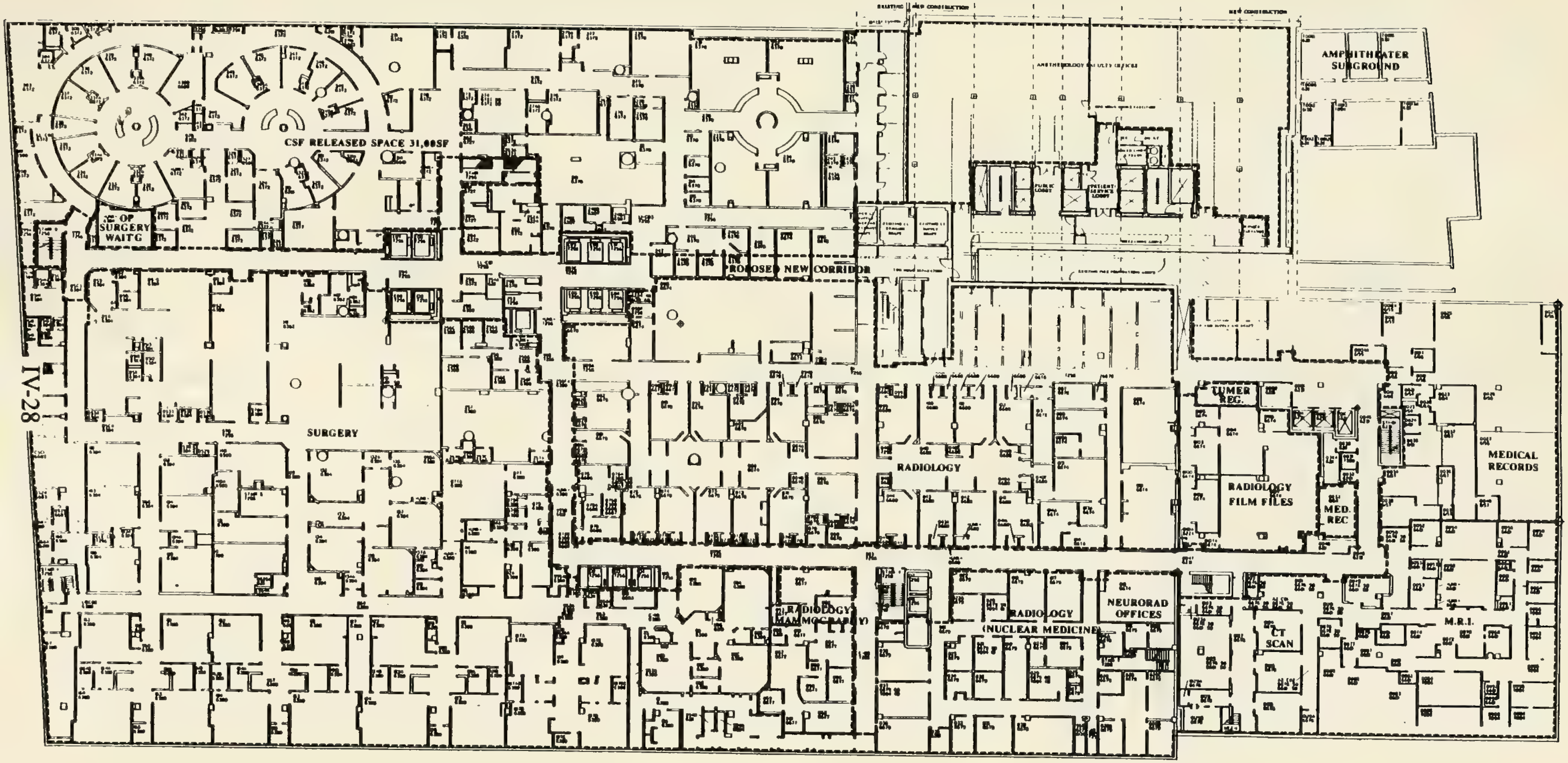


FIGURE IV-7: L1 LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**
TSOI / KOBUS & ASSOCIATES ARCHITECTS
SCHEMATIC DESIGN 11 JANUARY 1991

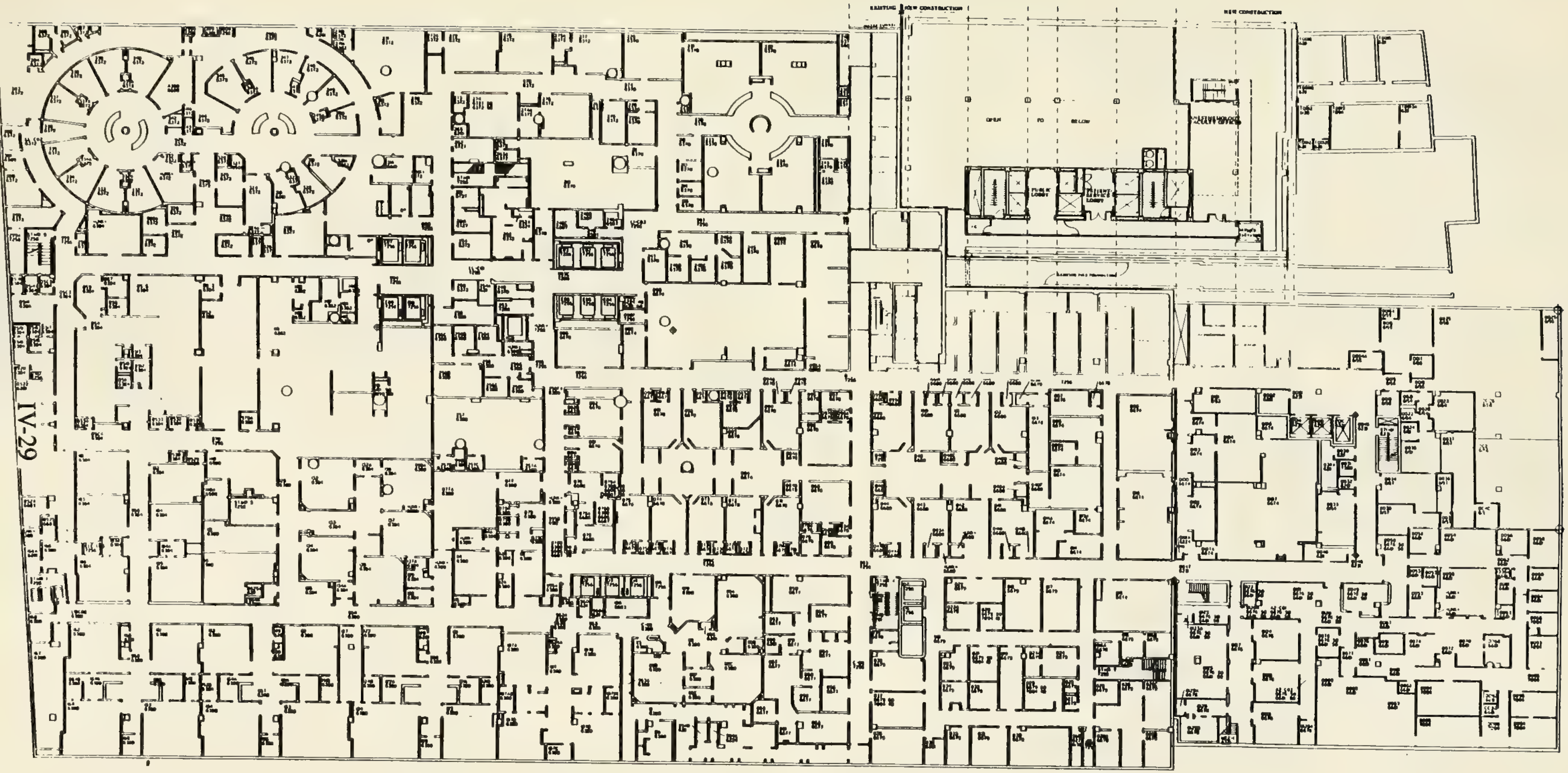


FIGURE IV-8: L-1 INTERMEDIATE LEVEL FLOOR PLAN

BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY*

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] 11 JANUARY 1991

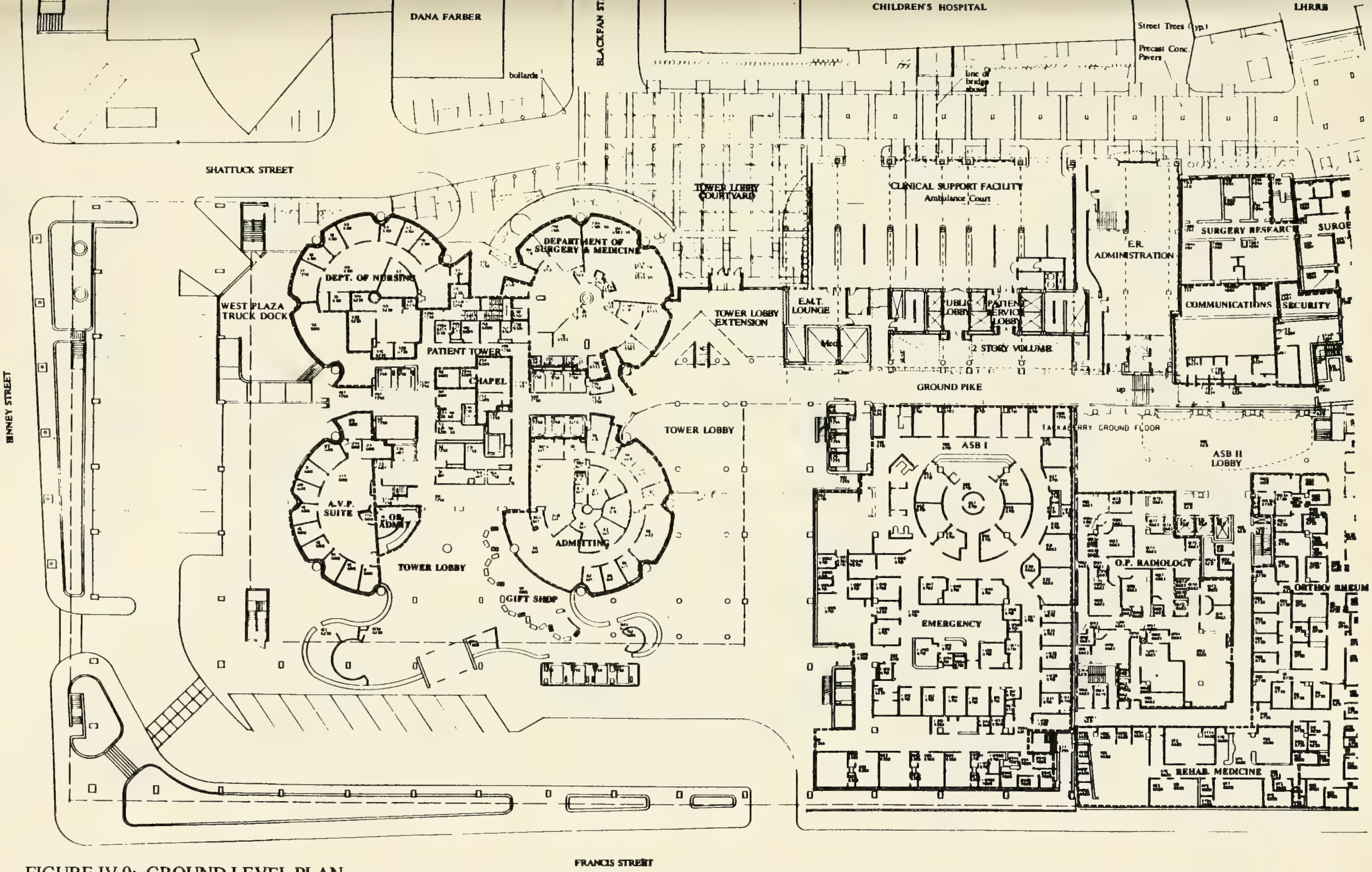


FIGURE IV-9: GROUND LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

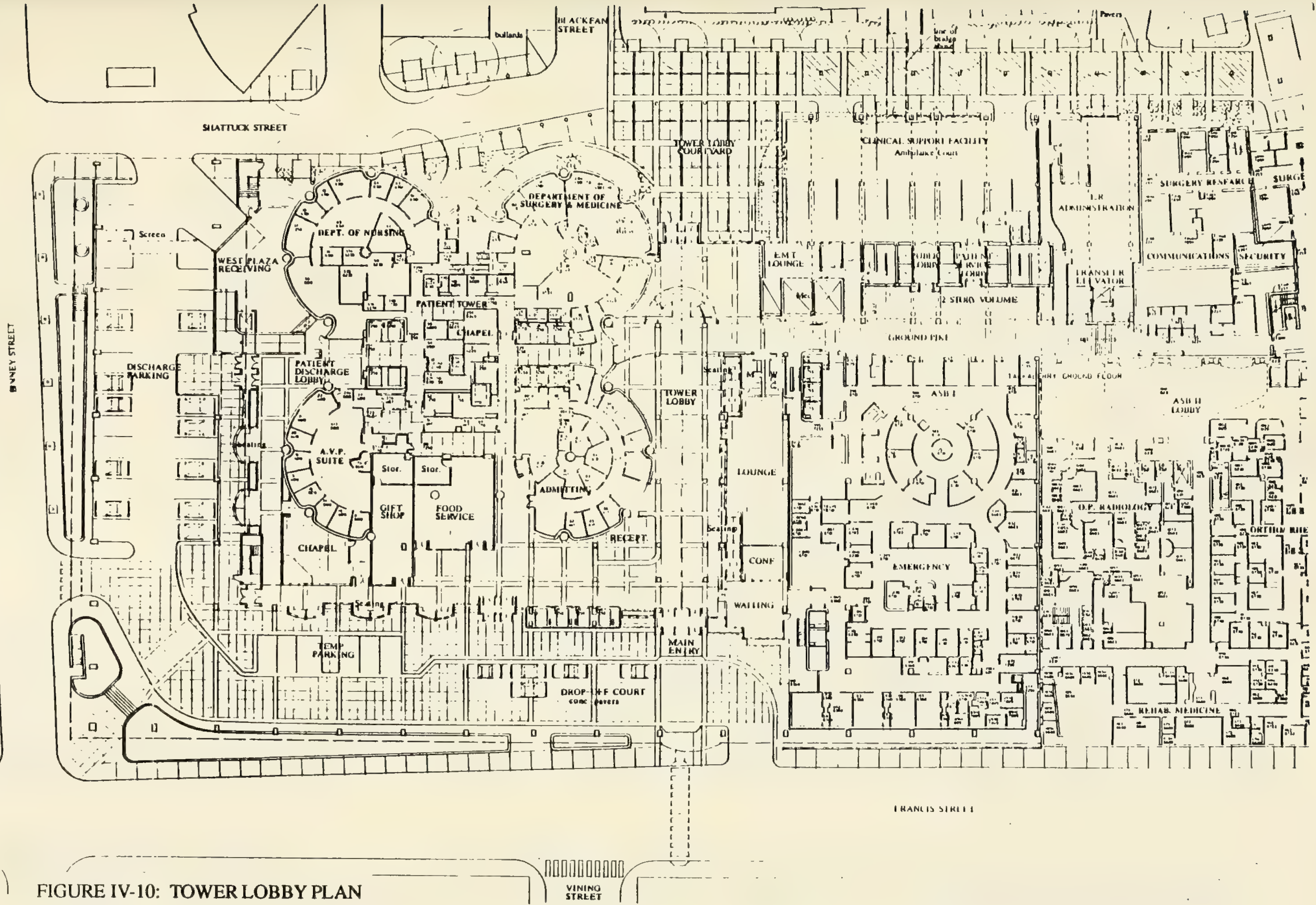


FIGURE IV-10: TOWER LOBBY PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI/KOBUS & ASSOCIATES ARCHITECTS

CONCEPTUAL DESIGN

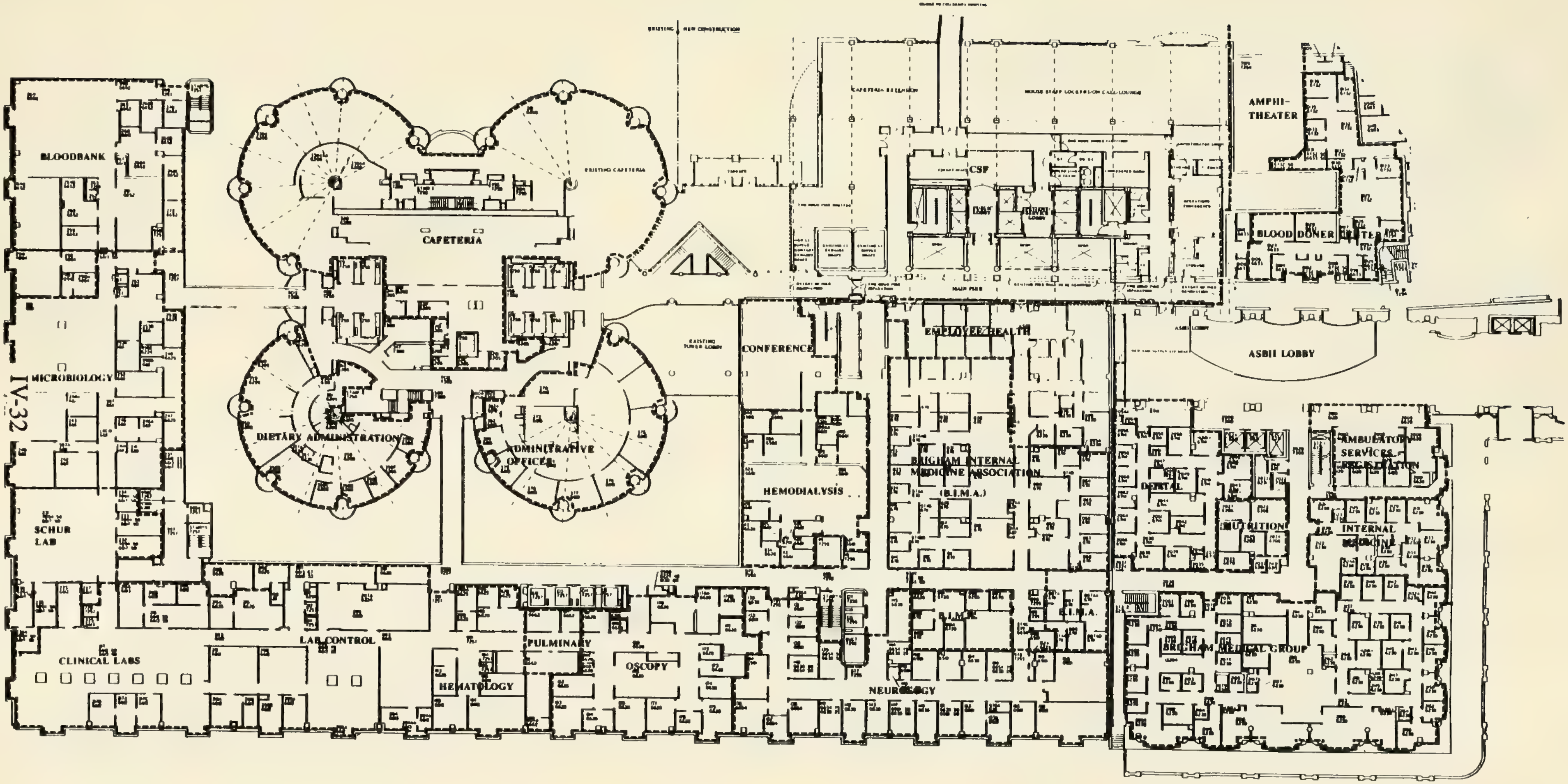


FIGURE IV-11: MAIN LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY*

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

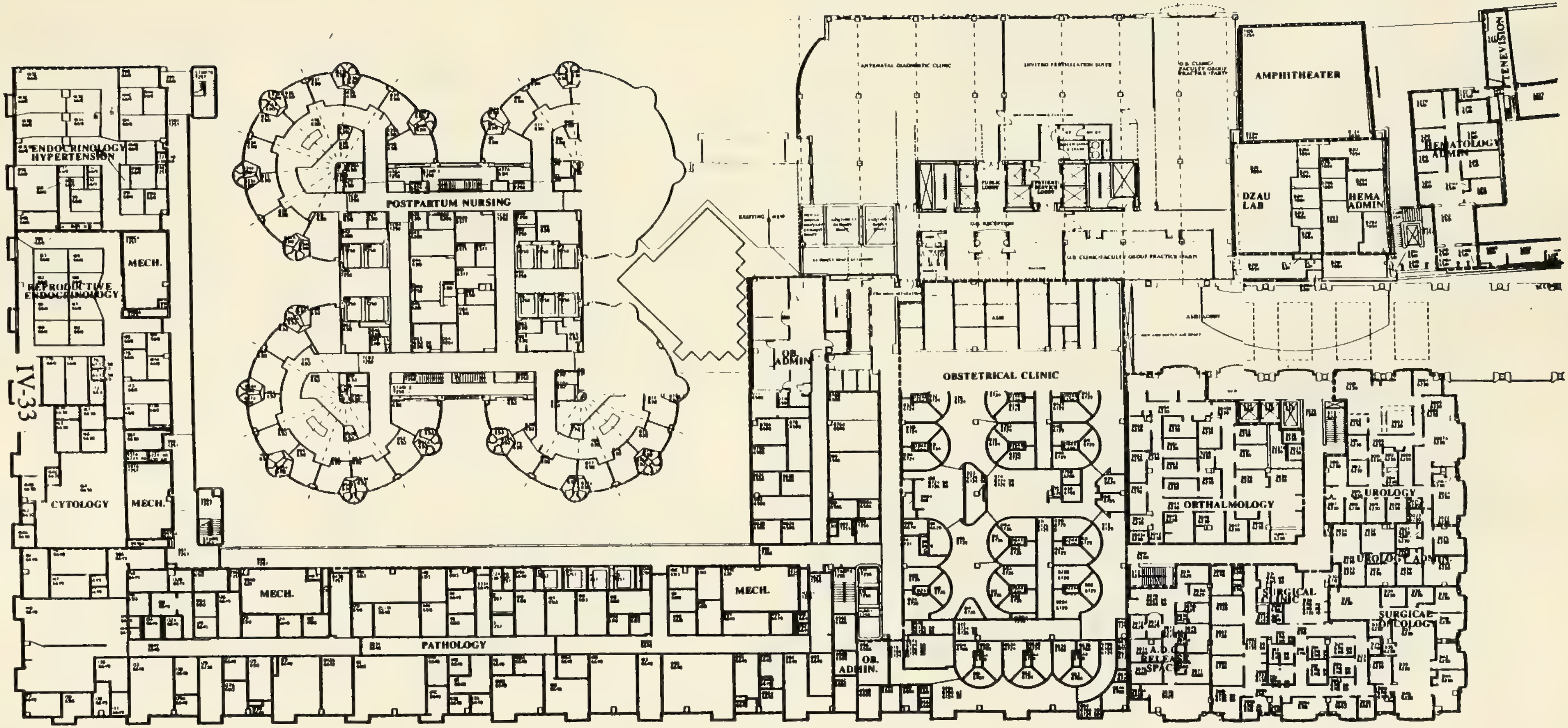


FIGURE IV-12: LEVEL 3 PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

0 4 8 16

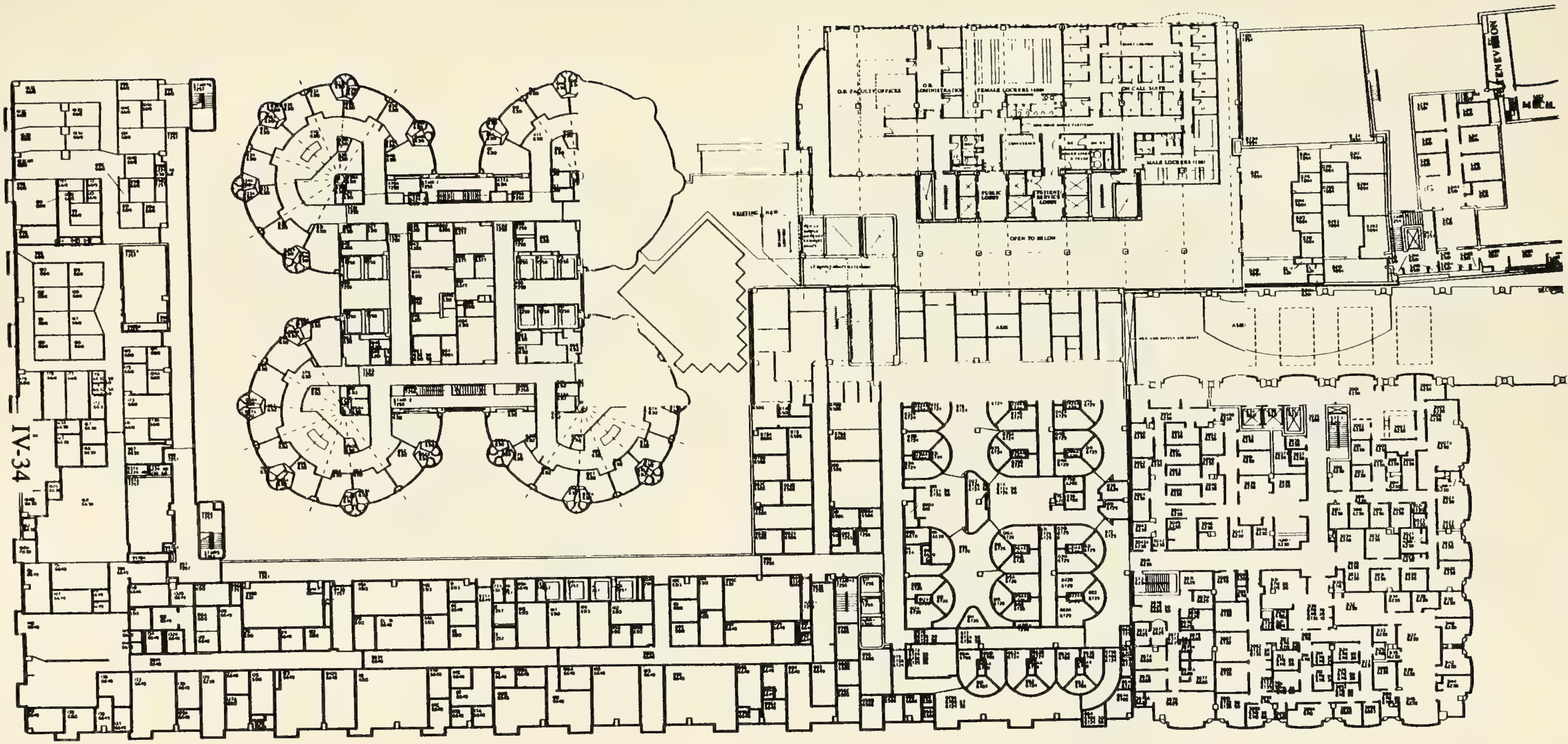


FIGURE IV-13: 3/4 INTERMEDIATE LEVEL FLOOR PLAN

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

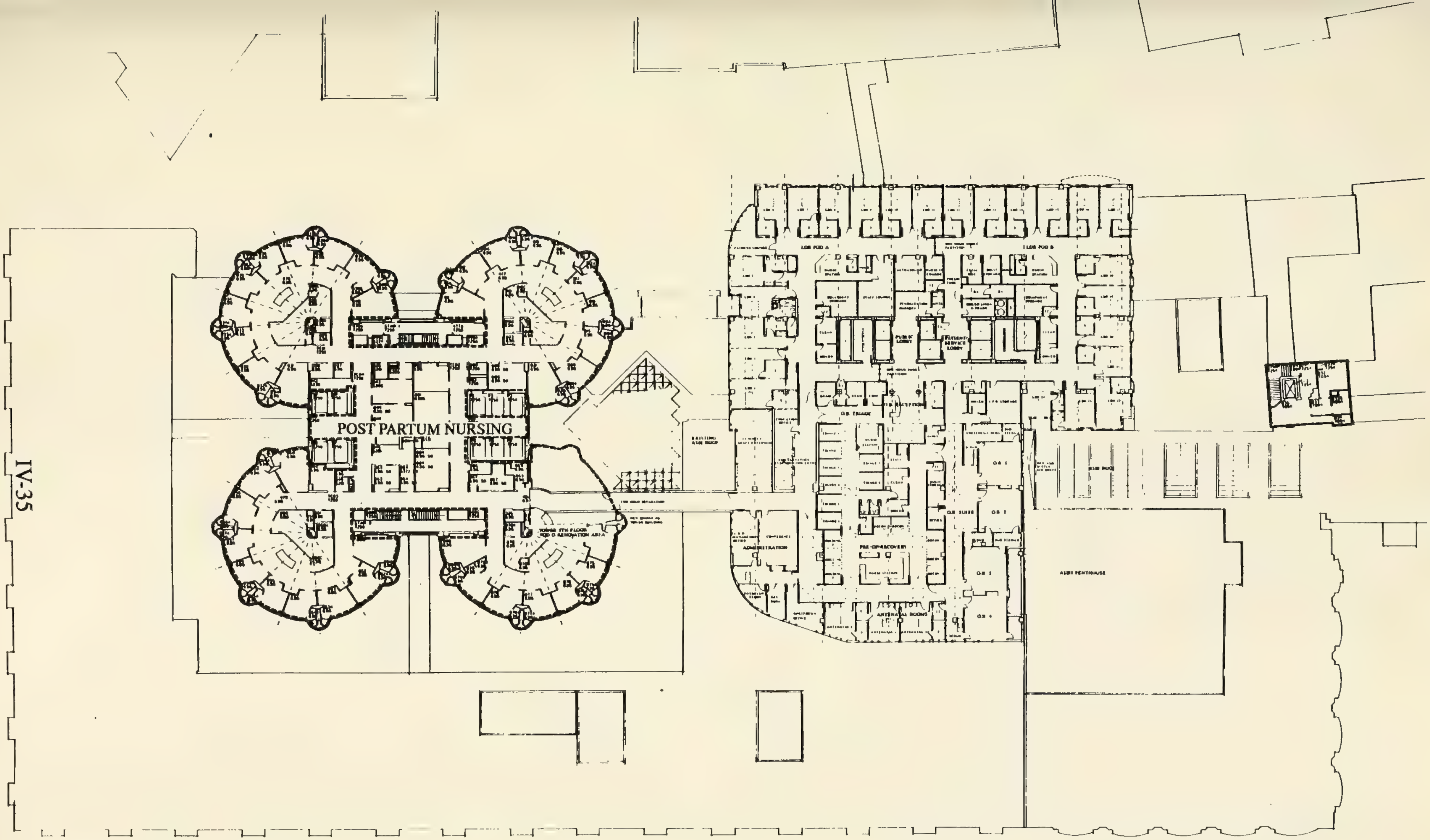


FIGURE IV-14: LEVEL 4 PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

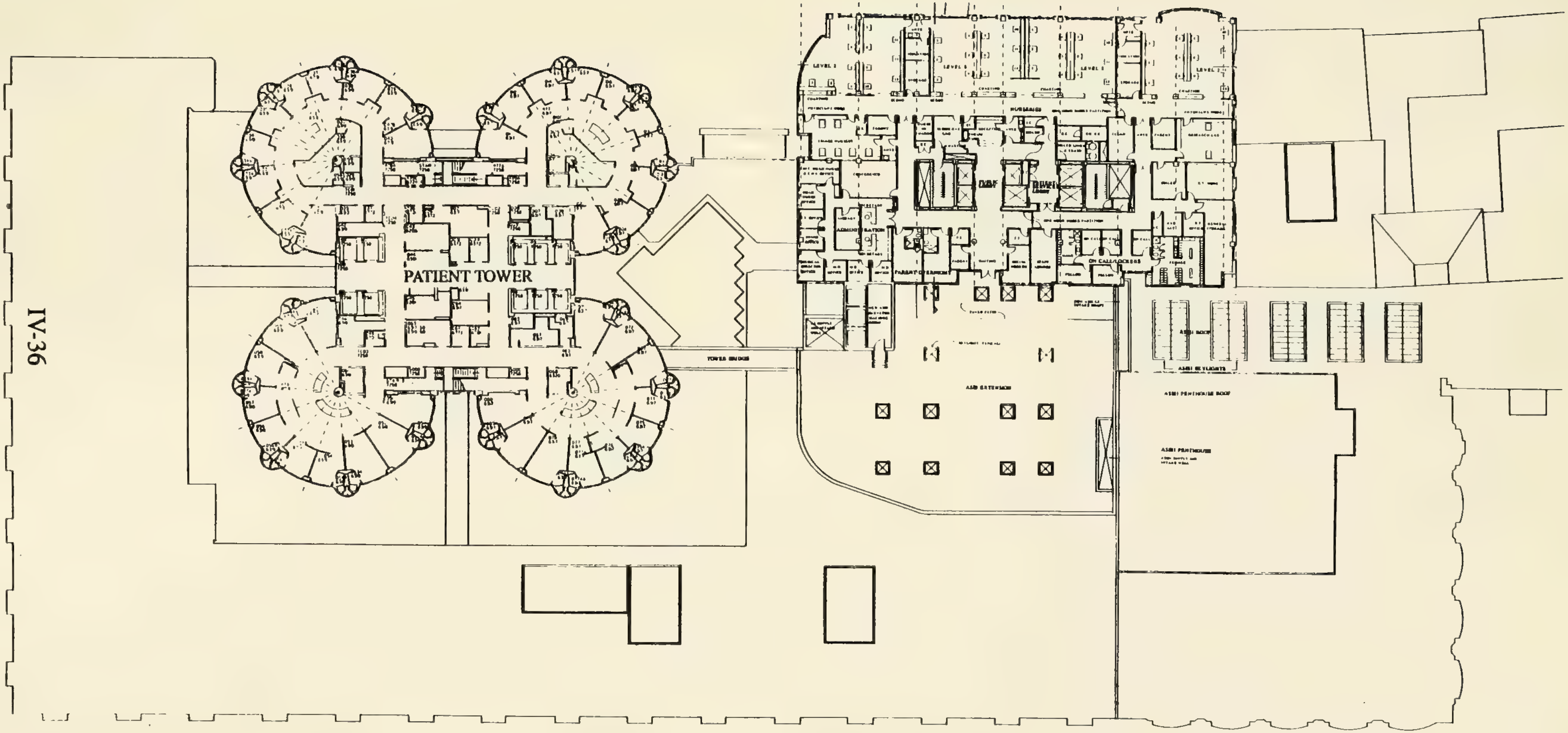


FIGURE IV-15: LEVEL 5 PLAN

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] 11 JANUARY 1991

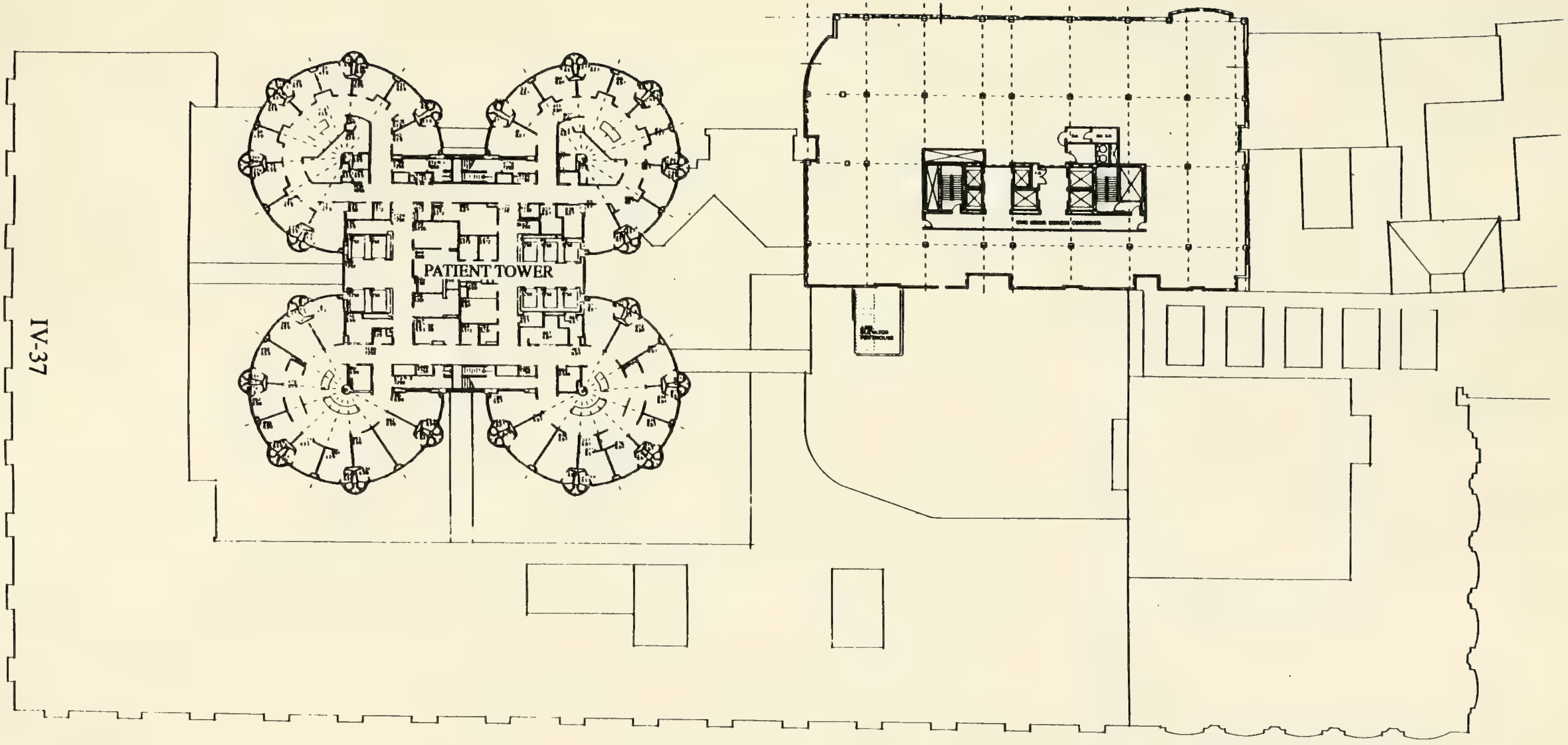


FIGURE IV-16: LEVEL 6-9 PLAN (INITIAL PHASE)

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**
TSOI / KOBUS & ASSOCIATES ARCHITECTS
SCHEMATIC DESIGN

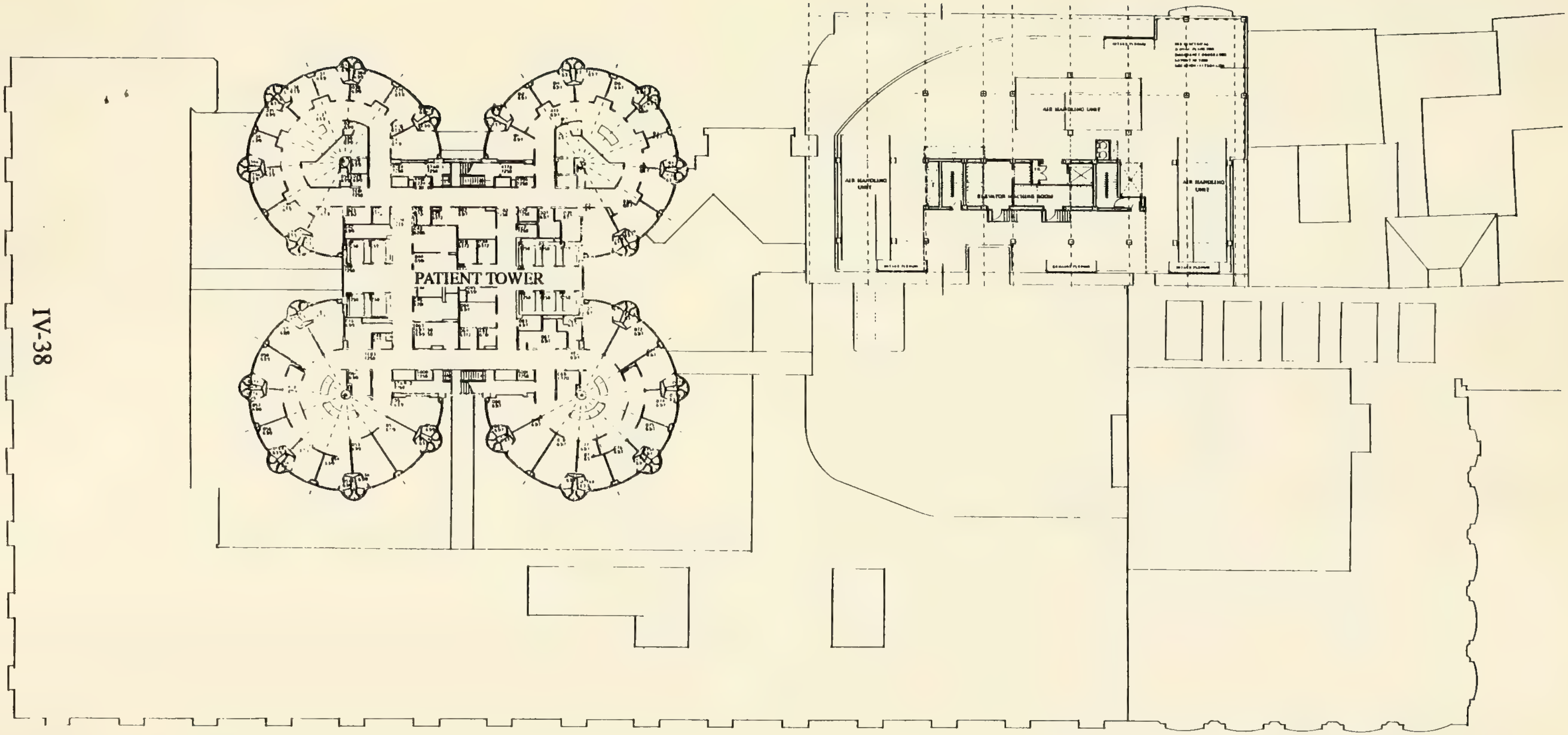


FIGURE IV-17: PENTHOUSE LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

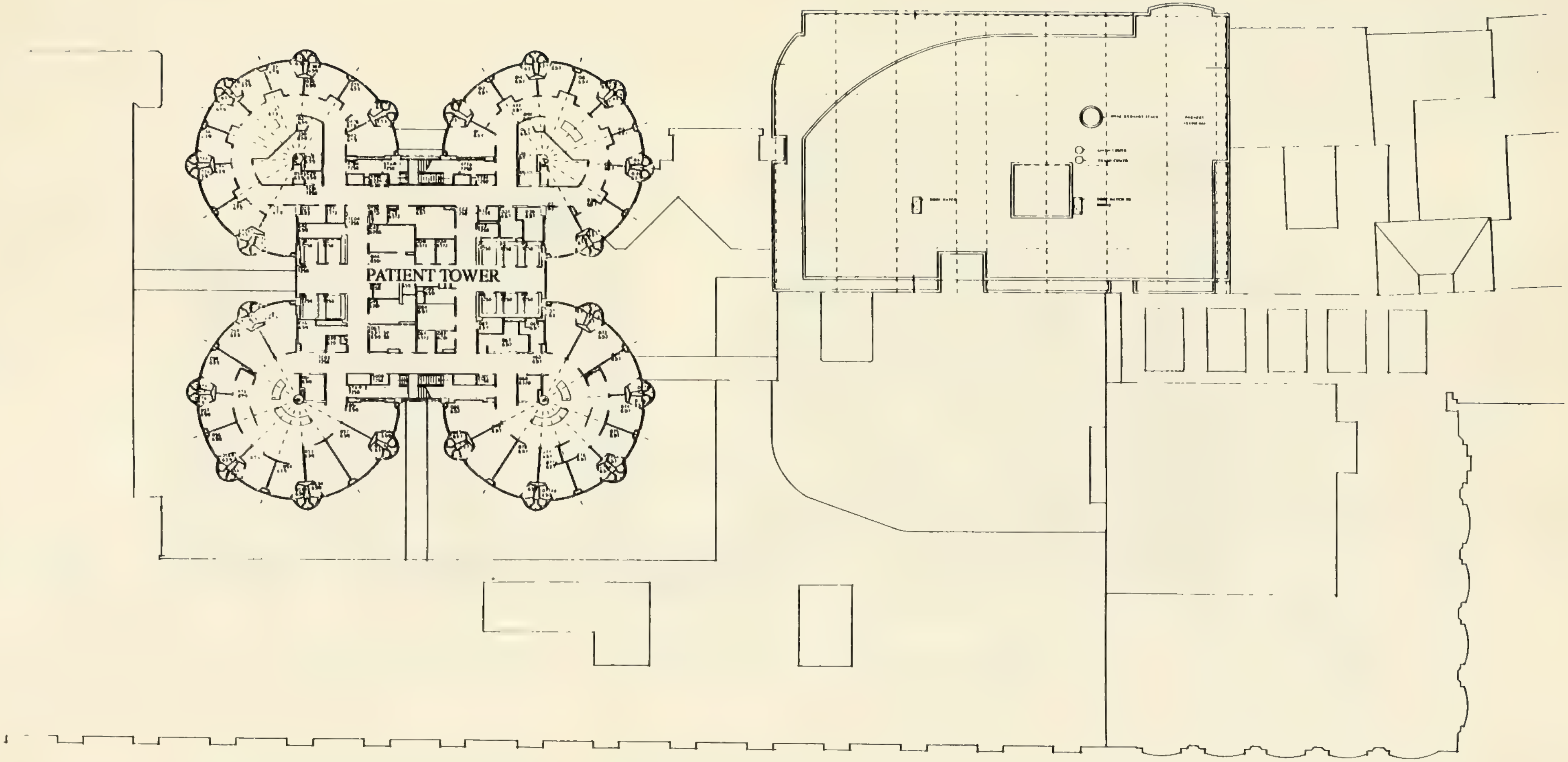


FIGURE IV-18: ROOF LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

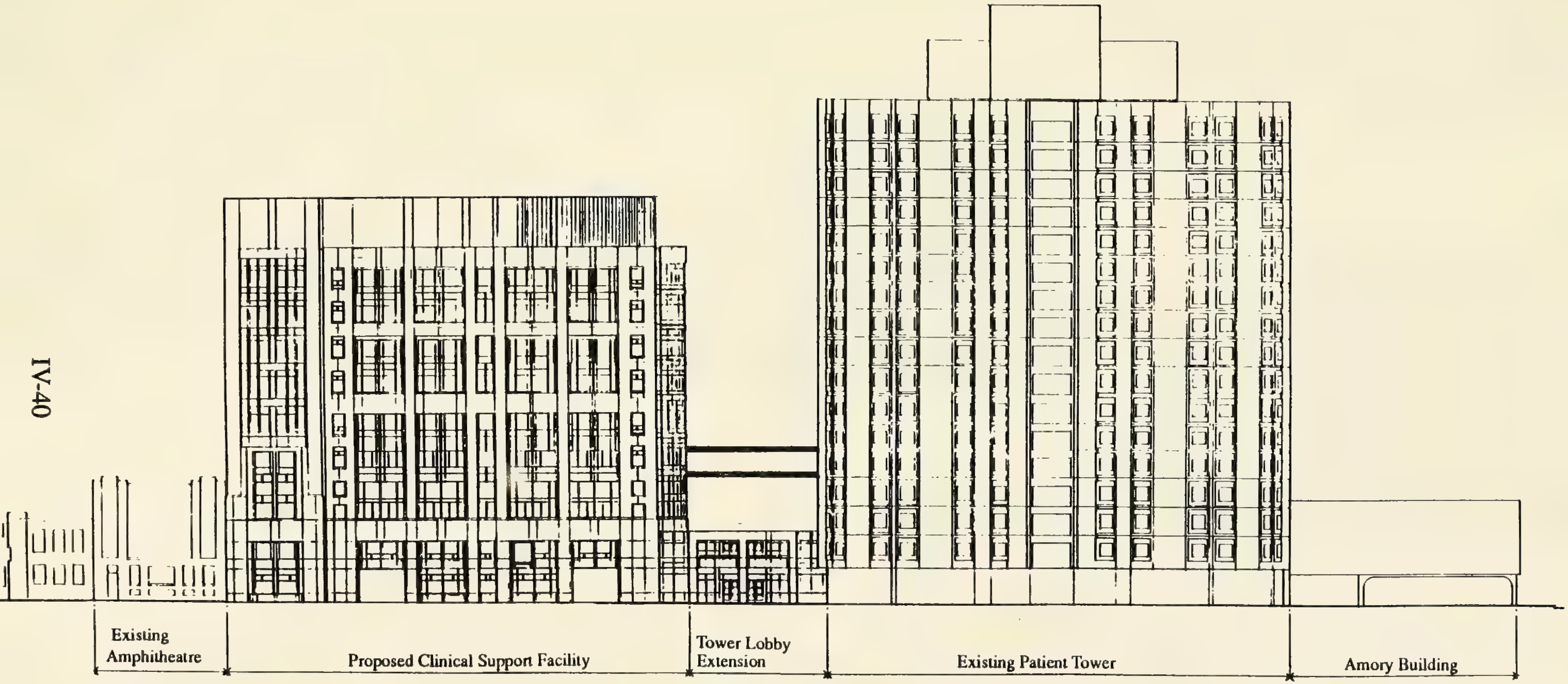


FIGURE IV-19: SHATTUCK STREET ELEVATION (NORTH)

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] 11 JANUARY [illegible]

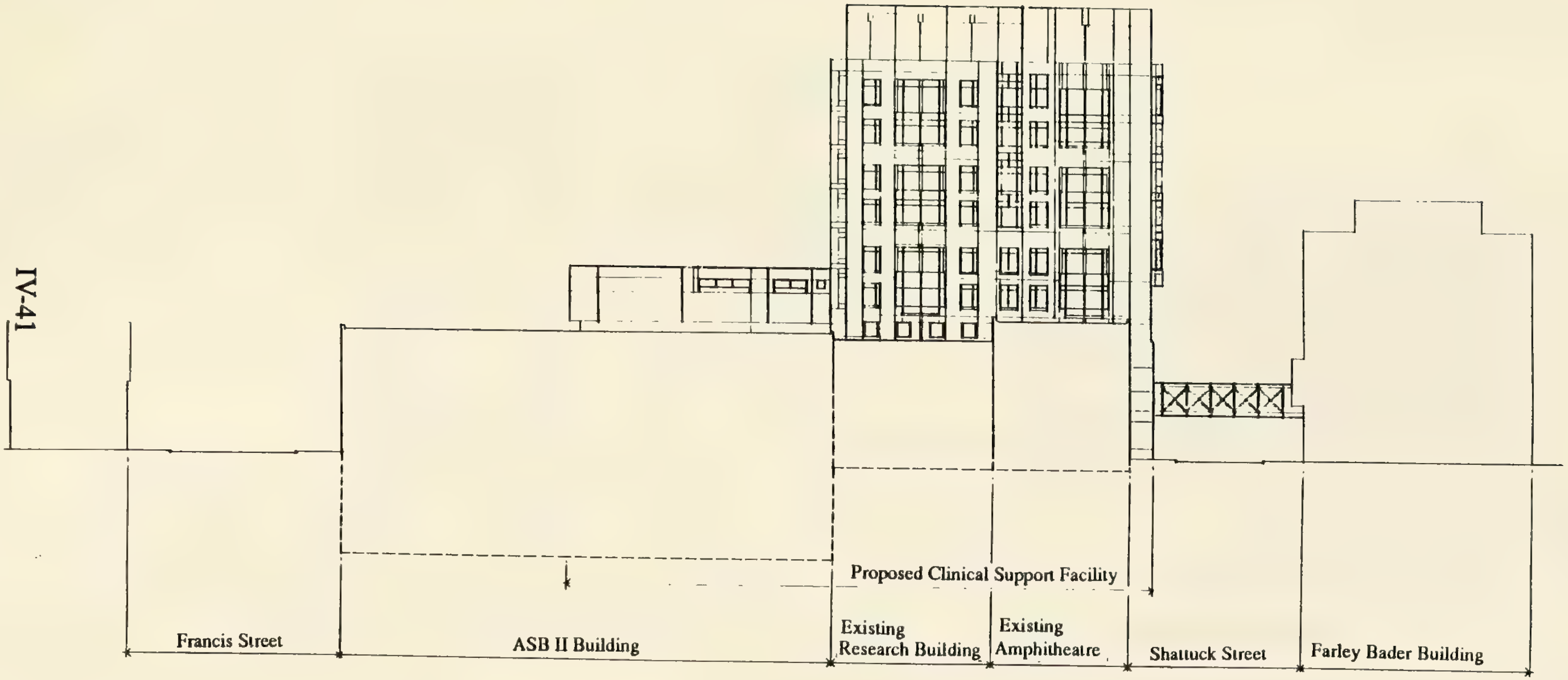


FIGURE IV-20: EAST ELEVATION

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY
TSOI / KOBUS & ASSOCIATES ARCHITECTS
SCHEMATIC DESIGN

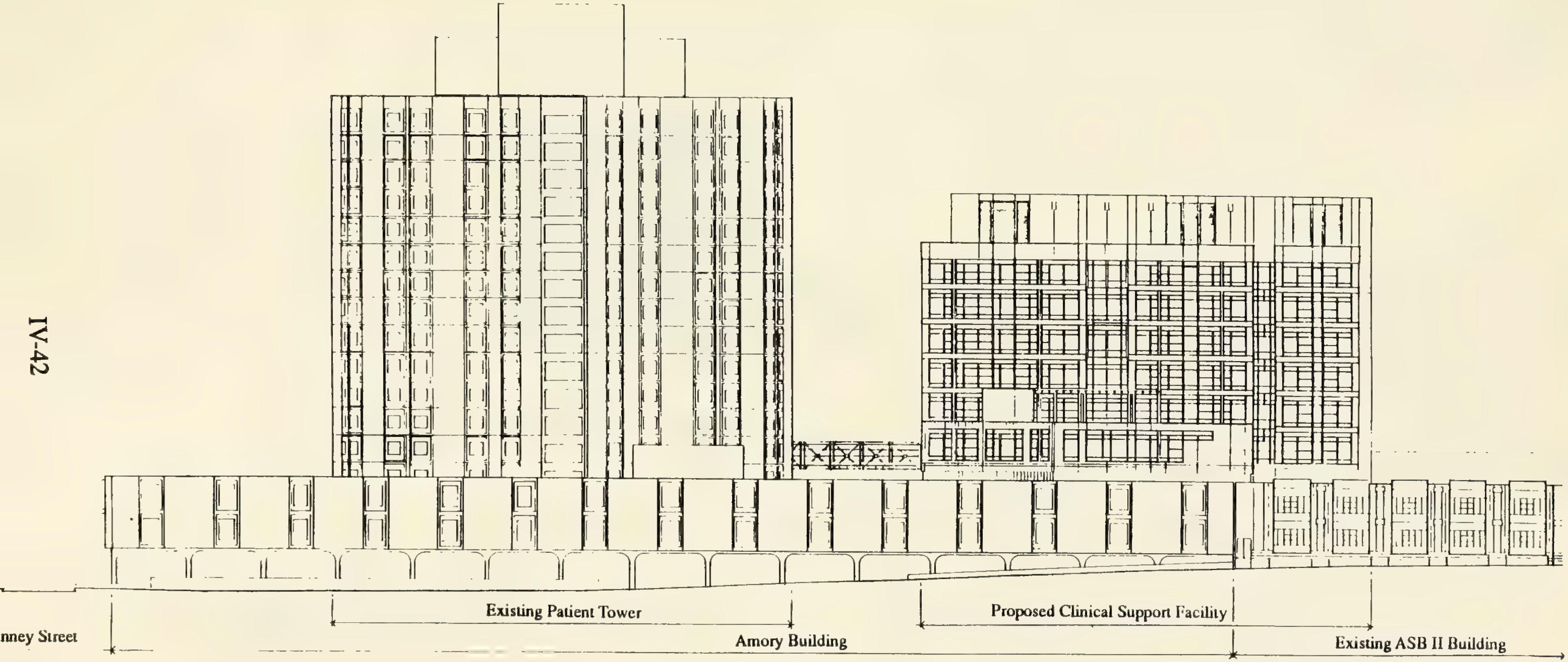


FIGURE IV-21: FRANCIS STREET ELEVATION (SOUTH)

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY
TSOI / KOBUS & ASSOCIATES ARCHITECTS
SCHEMATIC DESIGN [illegible] 11 JANUARY 1991

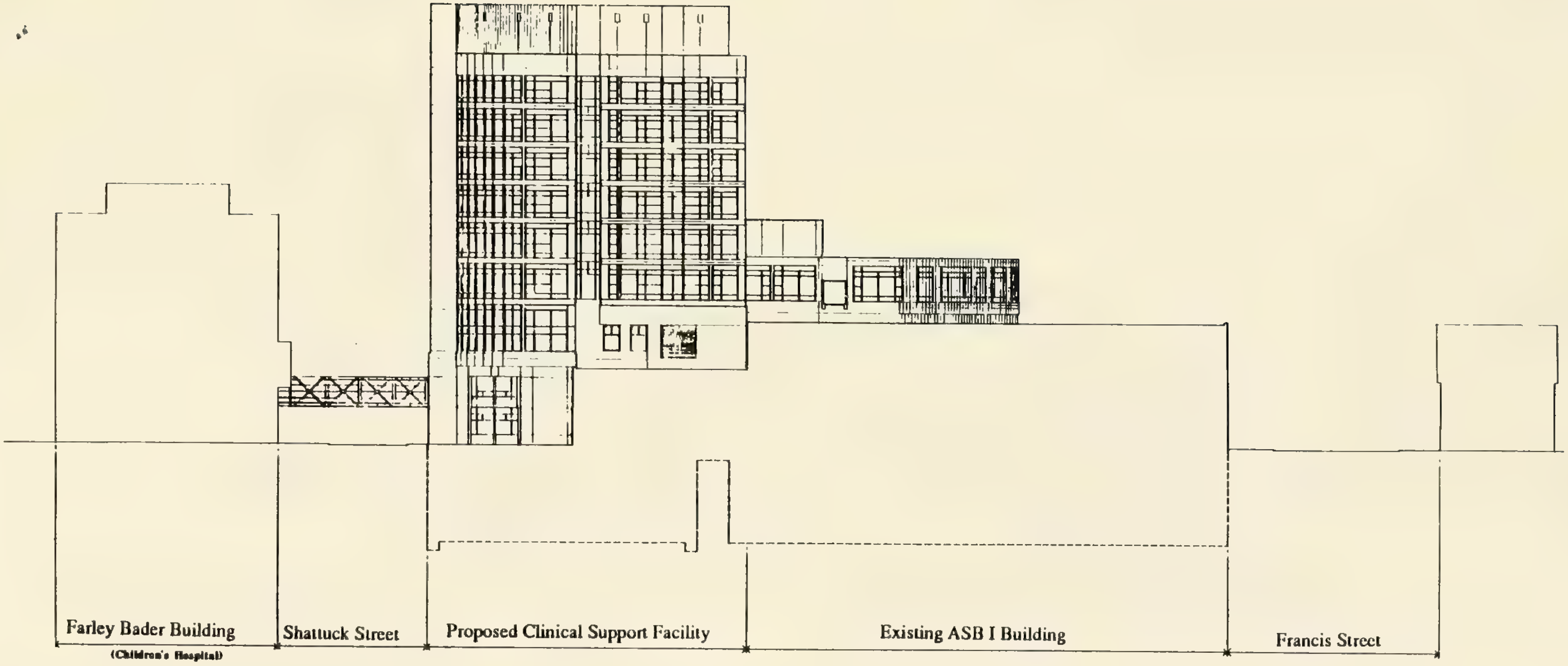


FIGURE IV-22: WEST ELEVATION

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] 11 JANUARY [illegible]

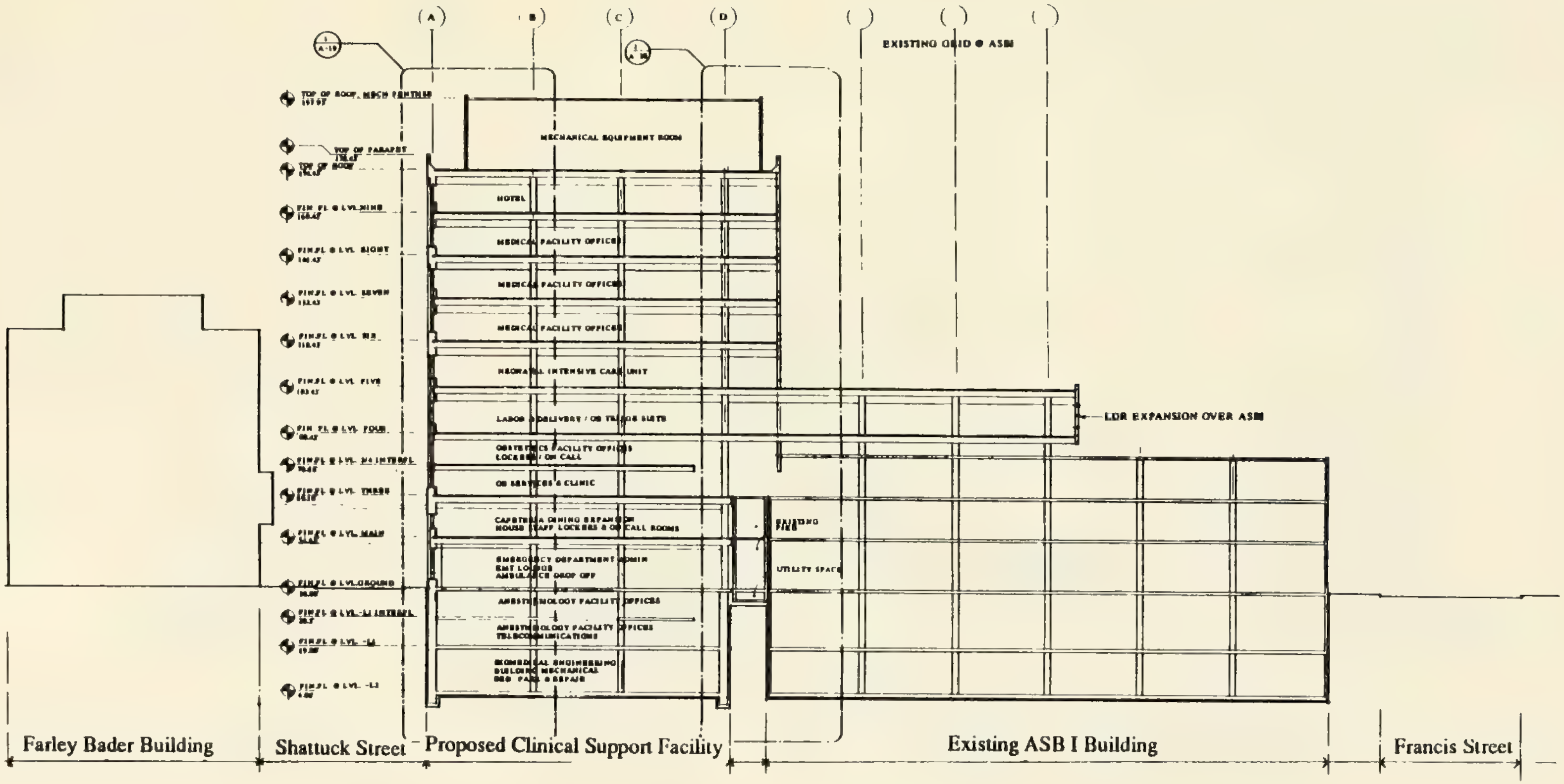


FIGURE IV-23: BUILDING SECTION TRANSVERSE

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

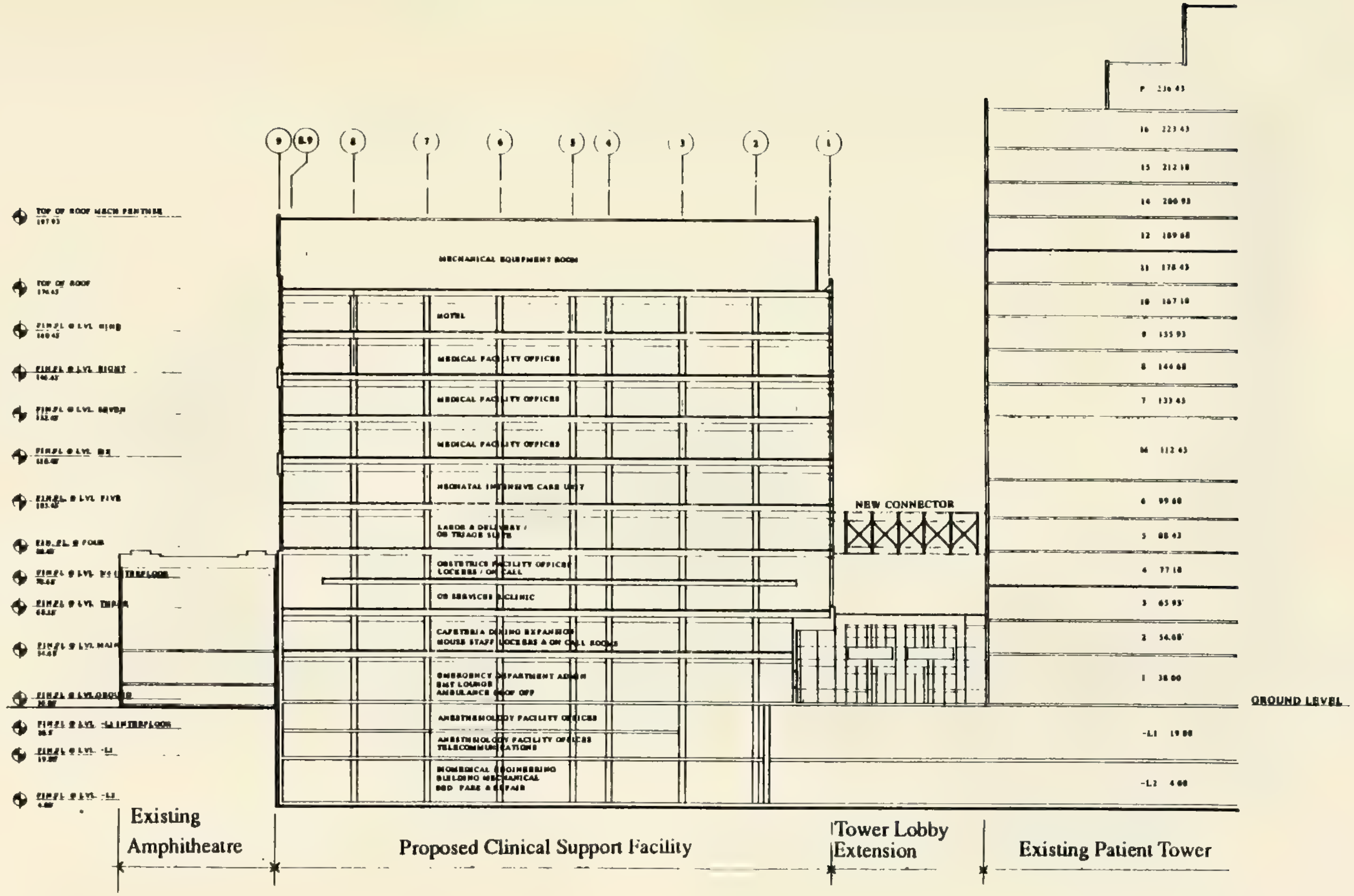

TOP OF ROOF MECH PENTHOUSE
TOP OF ROOF
FIN.FL @ LVL NINE
FIN.FL @ LVL EIGHT
FIN.FL @ LVL SEVEN
FIN.FL @ LVL SIX
FIN.FL @ LVL FIVE
FIN.FL @ FOUR
FIN.FL @ LVL 2/3 INTERFLOOR
FIN.FL @ LVL THREE
FIN.FL @ LVL MAIN
FIN.FL @ LVL GROUND
FIN.FL @ LVL -L1 INTERFLOOR
FIN.FL @ LVL -L1
FIN.FL @ LVL -L2
9
8.9
8
7
6
5
4
3
2
1
MECHANICAL EQUIPMENT ROOM
HOTEL
MEDICAL FACILITY OFFICES
MEDICAL FACILITY OFFICES
MEDICAL FACILITY OFFICES
NEONATAL INTENSIVE CARE UNIT
LABOR & DELIVERY / OB TRIAGE SUITE
OBSTETRICS FACILITY OFFICES LOCKERS / ON CALL
OB SERVICES & CLINIC
CAFETERIA DINING EXPANSION HOUSE STAFF LOCKERS & ON CALL ROOMS
EMERGENCY DEPARTMENT ADMIN EMT LOUNGE AMBULANCE DROP OFF
ANESTHESIOLOGY FACILITY OFFICES
ANESTHESIOLOGY FACILITY OFFICES TELECOMMUNICATIONS
BIOMEDICAL ENGINEERING BUILDING MECHANICAL BED PARK & REPAIR
NEW CONNECTOR
P
16
15
14
12
11
10
9
8
7
M
6
5
4
3
2
1
-L1
-L2
GROUND LEVEL
Existing Amphitheatre
Proposed Clinical Support Facility
Tower Lobby Extension
Existing Patient Tower

FIGURE IV-24: BUILDING SECTION LONGITUDINAL

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

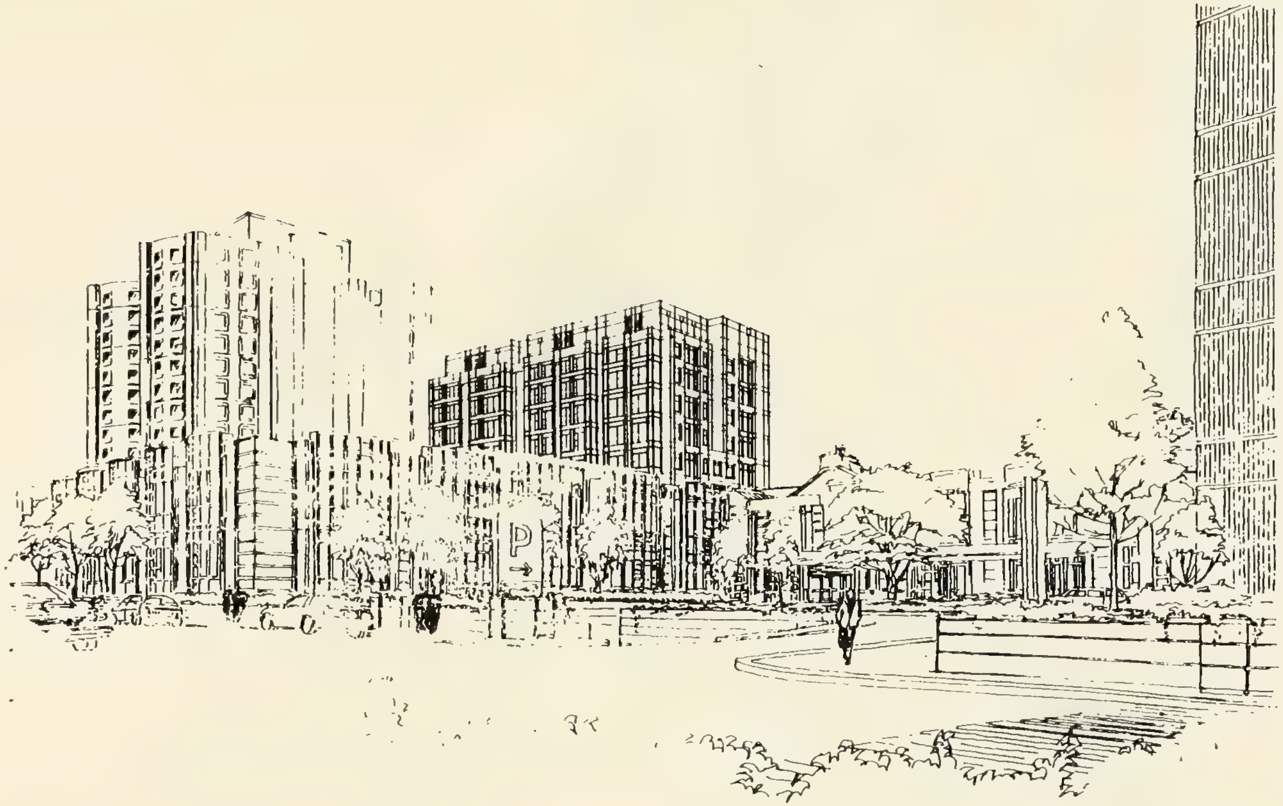


FIGURE IV-25: PERSPECTIVE VIEW FROM FRANCIS STREET

BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY*

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] 11 JANUARY 1991

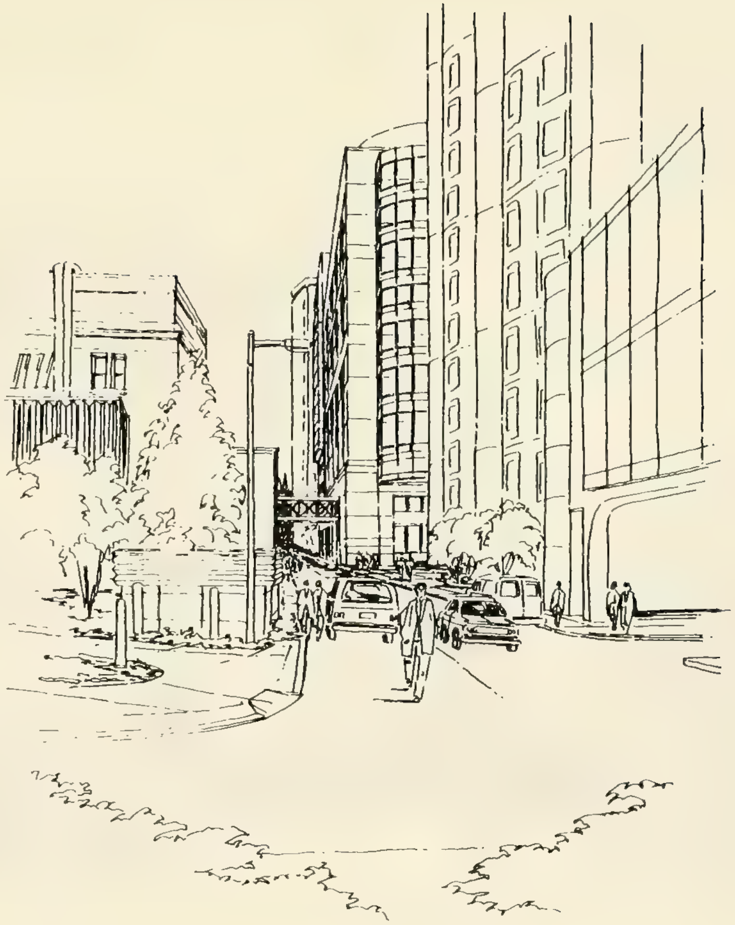


FIGURE IV-26: PERSPECTIVE VIEW FROM BINNEY STREET

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] 11 JANUARY 1991

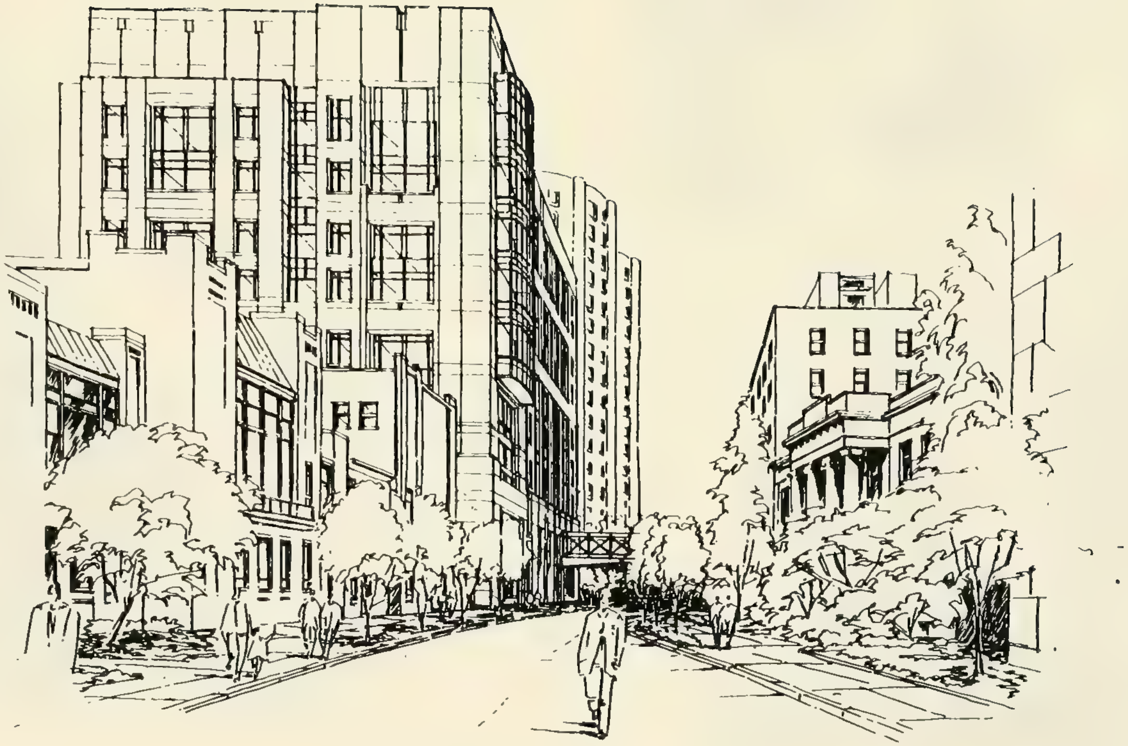


FIGURE IV-27: PERSPECTIVE VIEW FROM SHATTUCK STREET LOOKING WEST

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] 11 JANUARY [illegible]

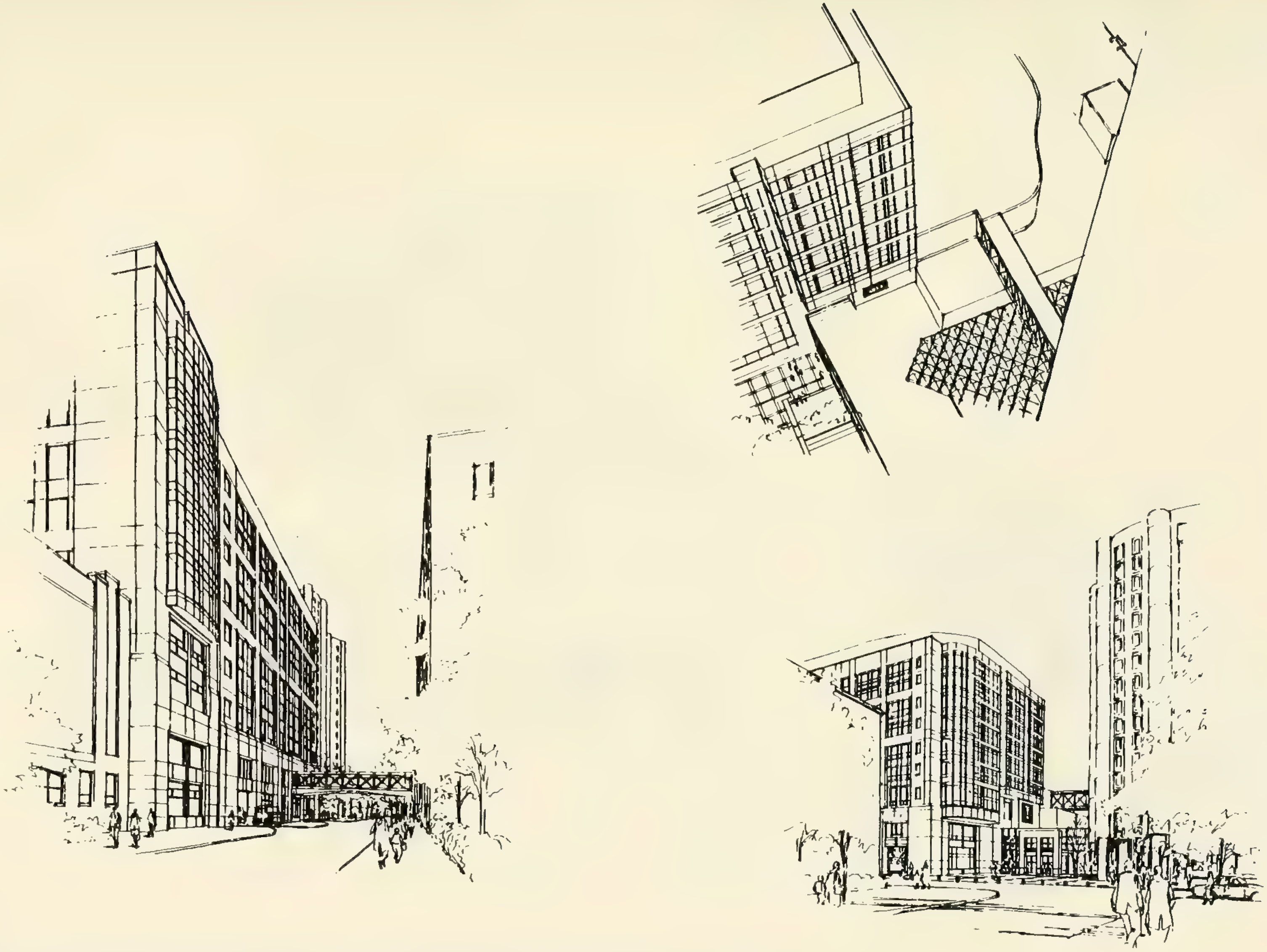


FIGURE IV-28: PERSPECTIVE VIEWS - FROM SHATTUCK ST., FROM TOWER, FROM BLACKFAN ST.

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] 11 JANUARY 1991

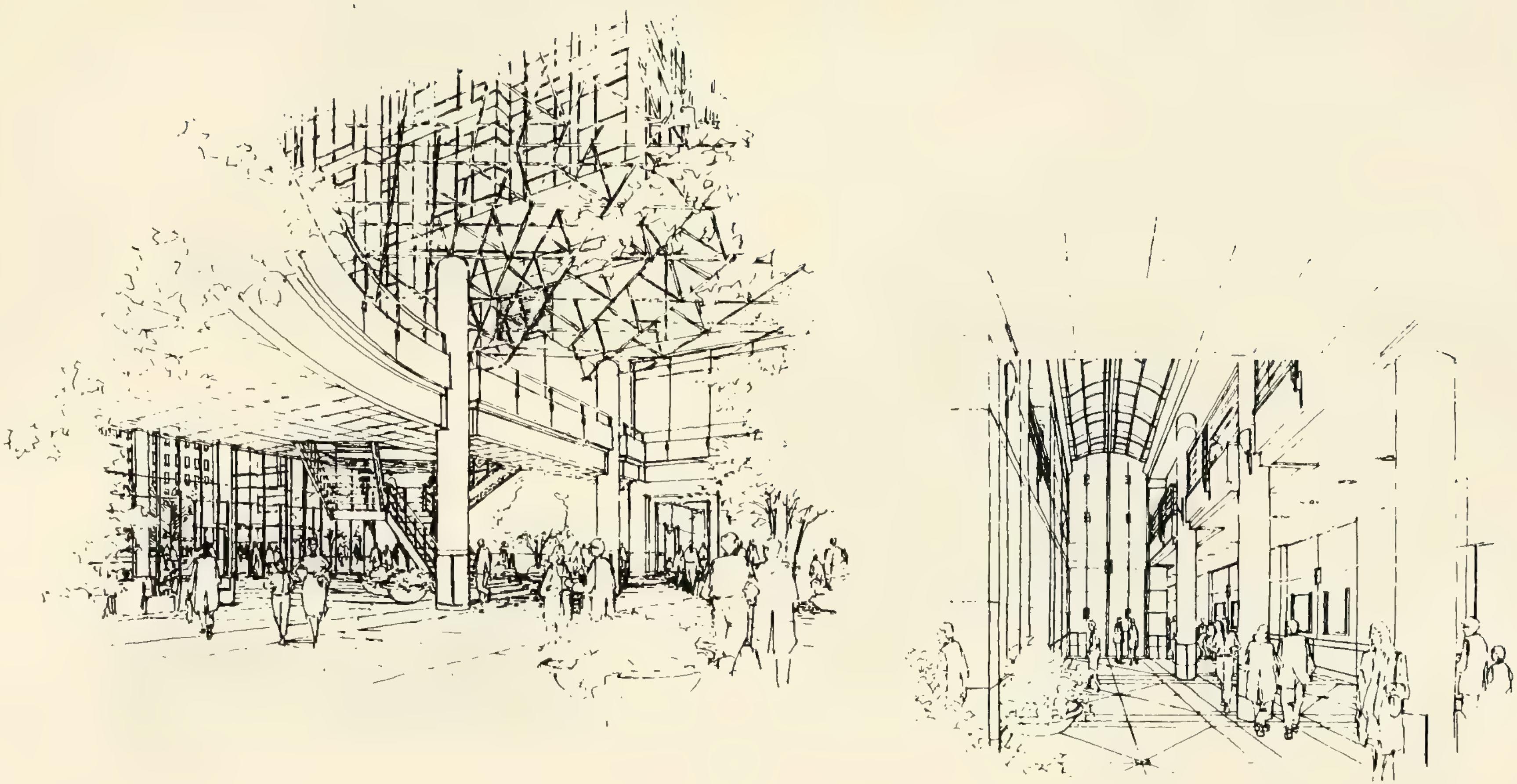


FIGURE IV-29: PERSPECTIVE VIEWS - AT TOWER LOBBY, AT SCF GROUND LOBBY

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY
TSOI / KOBUS & ASSOCIATES ARCHITECTS
SCHEMATIC DESIGN JOB [illegible] 11 JANUARY [illegible]

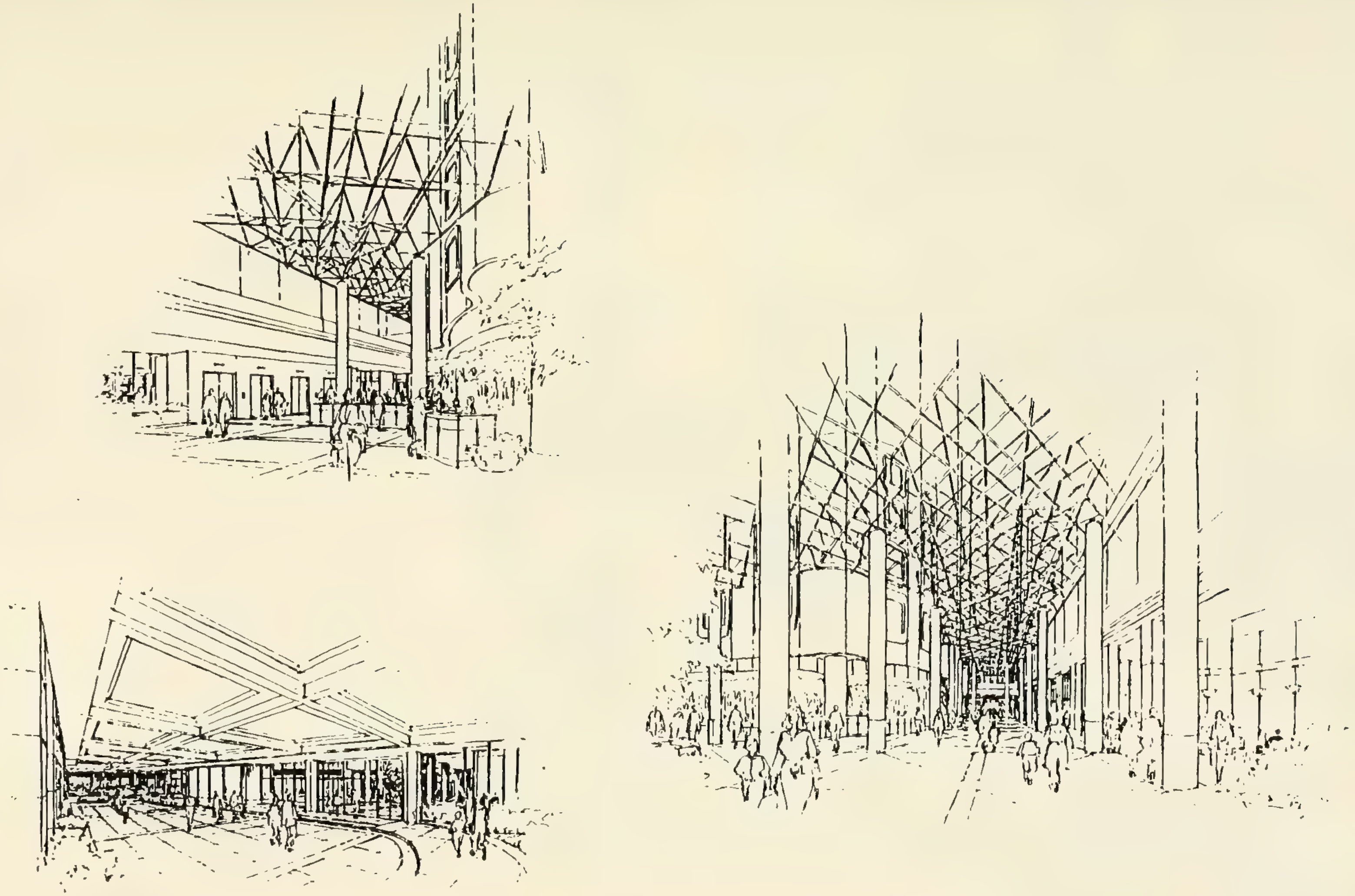


FIGURE IV-30: PERSPECTIVE VIEWS - TOWER LOBBY

BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY*

[illegible] & ASSOCIATES ARCHITECTS

CONCEPTUAL DESIGN

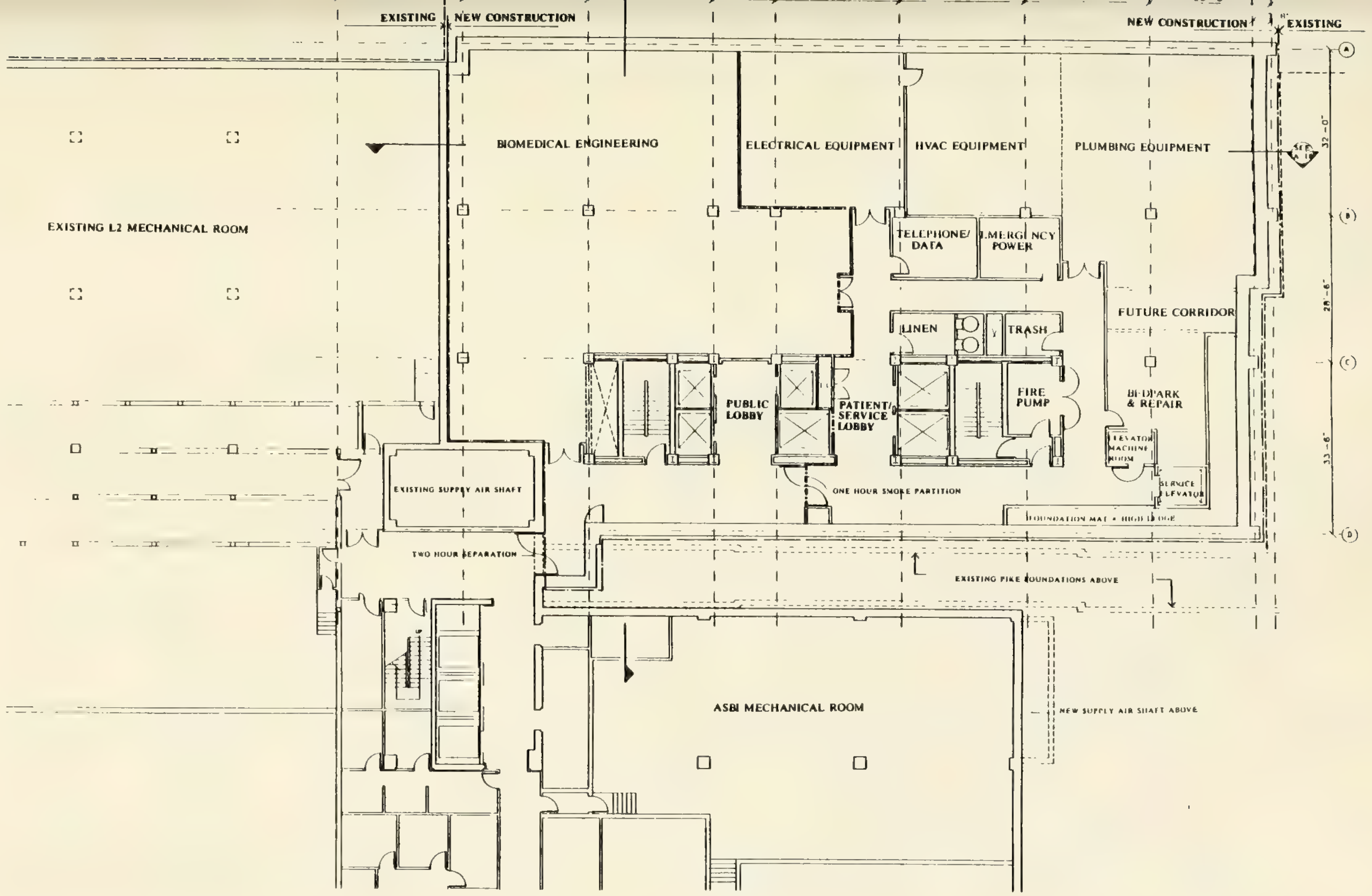


FIGURE IV-31: L2 LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY
TSOI / KOBUS & ASSOCIATES ARCHITECTS
L2 LEVEL PLAN
SCHEMATIC DESIGN 11 JANUARY 1991
A-30

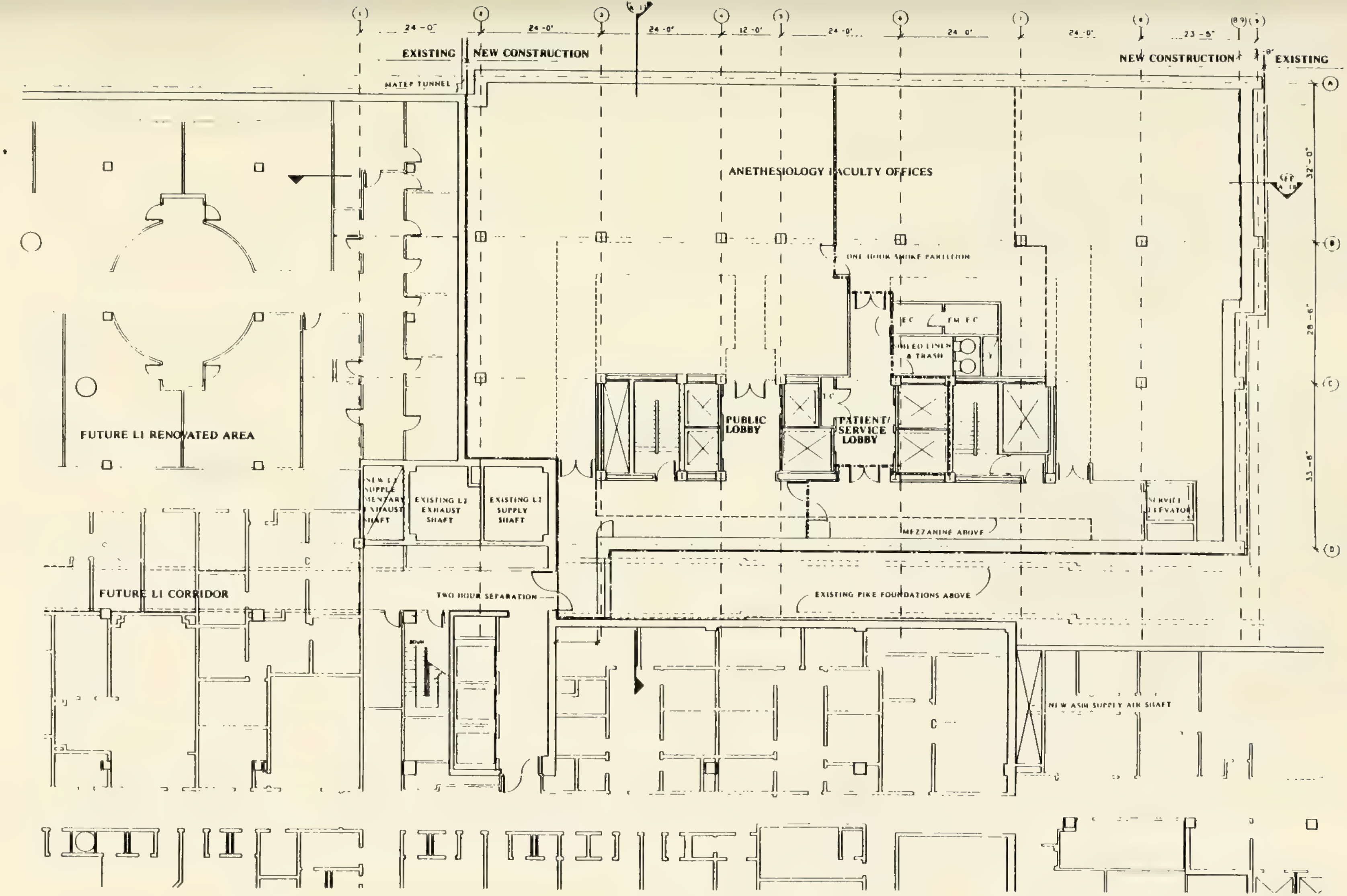


FIGURE IV-32: L1 LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY
TSOI / KOBUS & ASSOCIATES ARCHITECTS
SCHEMATIC DESIGN 11 JANUARY [illegible]

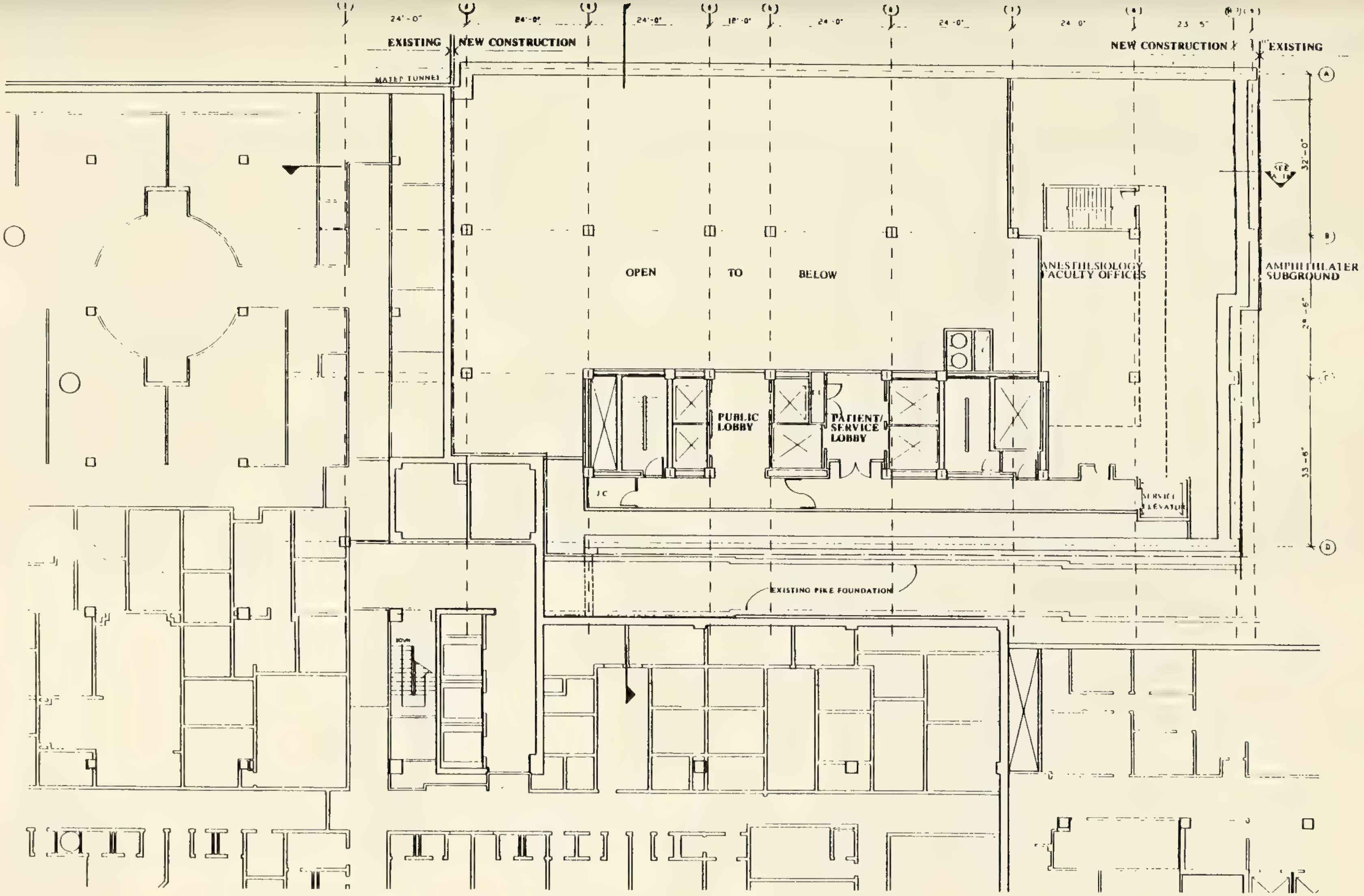


FIGURE IV-33: L1 INTERMEDIATE LEVEL FLOOR PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] 11 JANUARY 1991

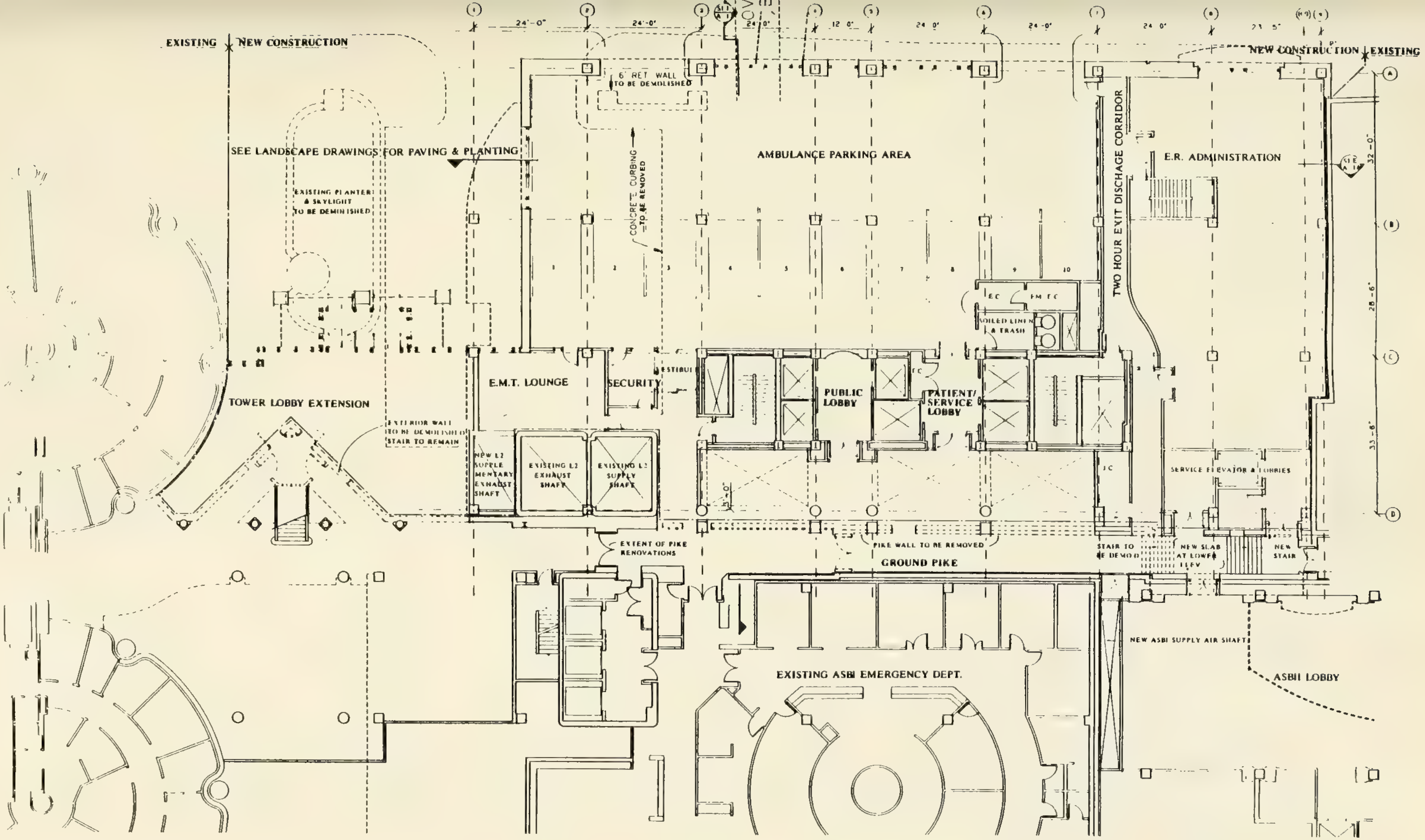

EXISTING
NEW CONSTRUCTION
NEW CONSTRUCTION
EXISTING
24'-0"
24'-0"
24'-0"
12' 0"
24' 0"
24'-0"
24' 0"
21' 5"
32'-0"
28'-6"
33'-6"
6" RET. WALL TO BE DEMOLISHED
SEE LANDSCAPE DRAWINGS FOR PAVING & PLANTING
EXISTING PLANTER & SKYLIGHT TO BE DEMOLISHED
CONCRETE CURBING TO BE REMOVED
AMBULANCE PARKING AREA
TWO HOUR EXIT DISCHAGE CORRIDOR
E.R. ADMINISTRATION
EC
FM EC
SOILED LINEN & TRASH
E.M.T. LOUNGE
SECURITY
VESTIBULE
PUBLIC LOBBY
PATIENT/ SERVICE LOBBY
TOWER LOBBY EXTENSION
EXTERIOR WALL TO BE DEMOLISHED STAIR TO REMAIN
NEW L2 SUPPLEMENTARY EXHAUST SHAFT
EXISTING L2 EXHAUST SHAFT
EXISTING L2 SUPPLY SHAFT
JC
SERVICE ELEVATOR & LOBBIES
EXTENT OF PIKE RENOVATIONS
PIKE WALL TO BE REMOVED
GROUND PIKE
STAIR TO BE DEMOD
NEW SLAB AT LOWER LEV
NEW STAIR
NEW ASBI SUPPLY AIR SHAFT
ASBII LOBBY
EXISTING ASBI EMERGENCY DEPT.

FIGURE IV-34: GROUND LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

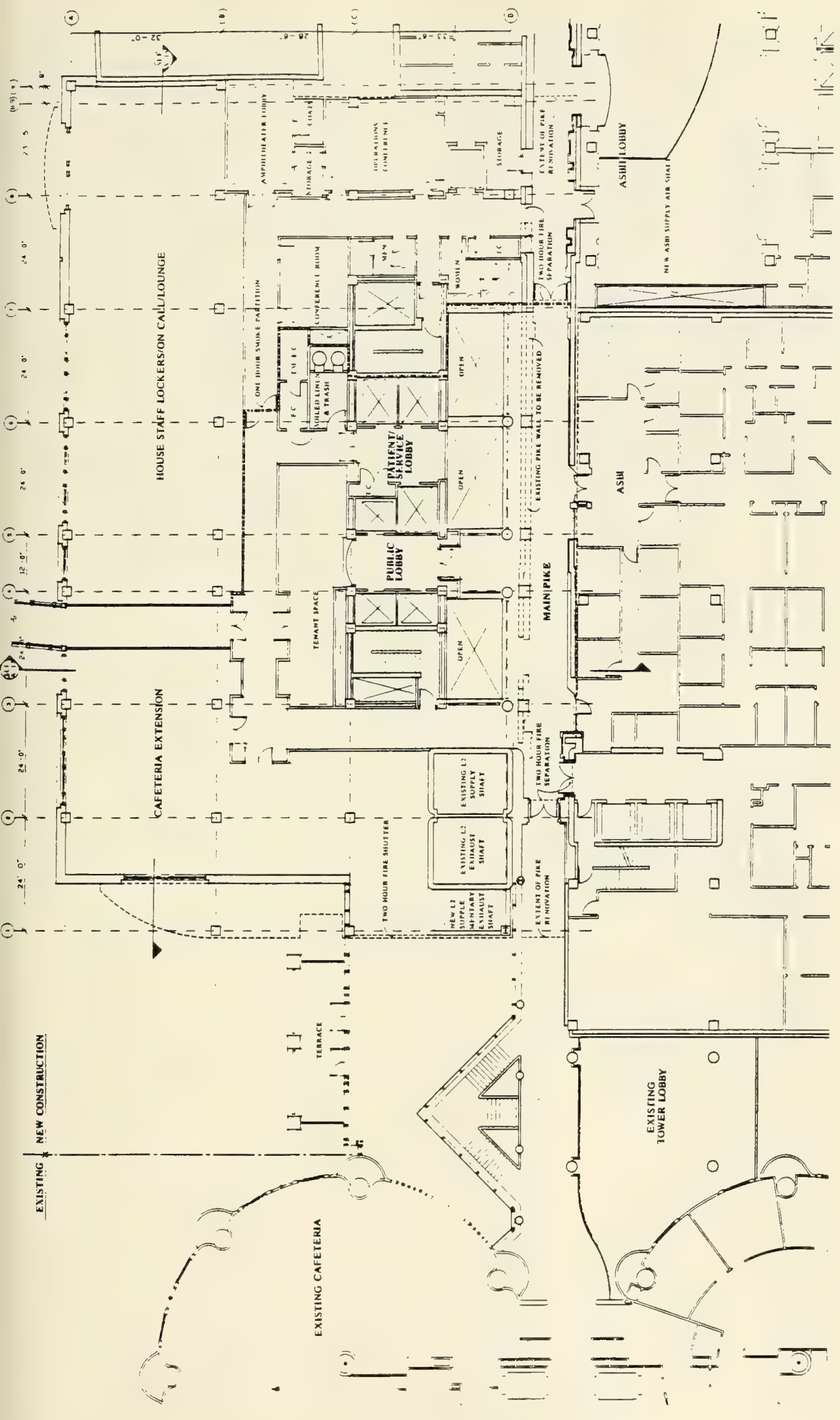


FIGURE IV-35: MAIN LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

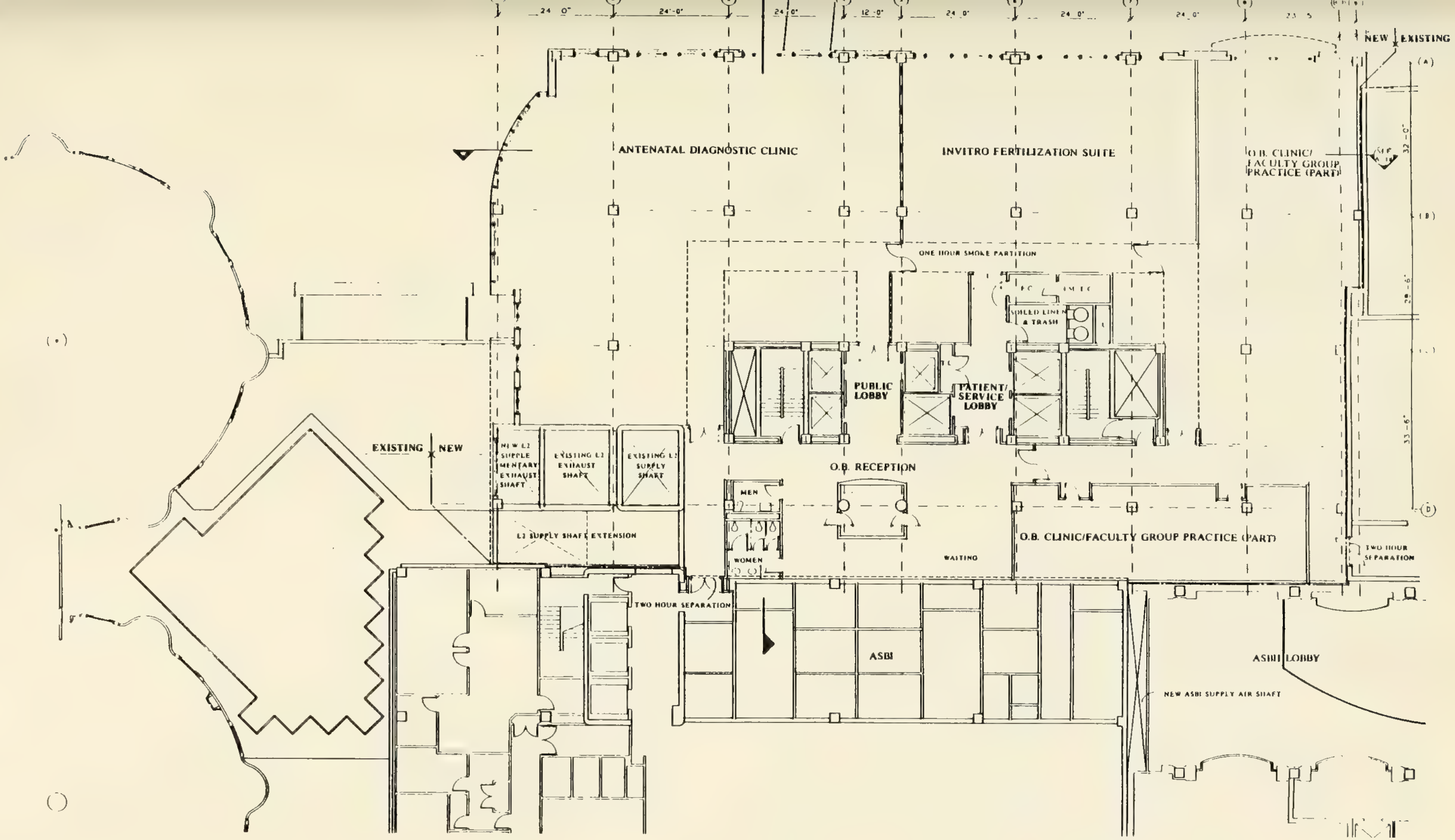

NEW
EXISTING
ANTENATAL DIAGNOSTIC CLINIC
INVITRO FERTILIZATION SUITE
O.B. CLINIC/ FACULTY GROUP PRACTICE (PART)
ONE HOUR SMOKE PARTITION
SOILED LINEN & TRASH
PUBLIC LOBBY
PATIENT/ SERVICE LOBBY
O.B. RECEPTION
MEN
WOMEN
WAITING
O.B. CLINIC/FACULTY GROUP PRACTICE (PART)
TWO HOUR SEPARATION
EXISTING
NEW
NEW L2 SUPPLEMENTARY EXHAUST SHAFT
EXISTING L2 EXHAUST SHAFT
EXISTING L2 SUPPLY SHAFT
L2 SUPPLY SHAFT EXTENSION
TWO HOUR SEPARATION
ASBI
ASBI LOBBY
NEW ASBI SUPPLY AIR SHAFT
24'-0"
12'-0"
32'-0"
28'-6"
33'-6"
(A)
(B)
(D)

FIGURE IV-36: LEVEL 3 PLAN

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

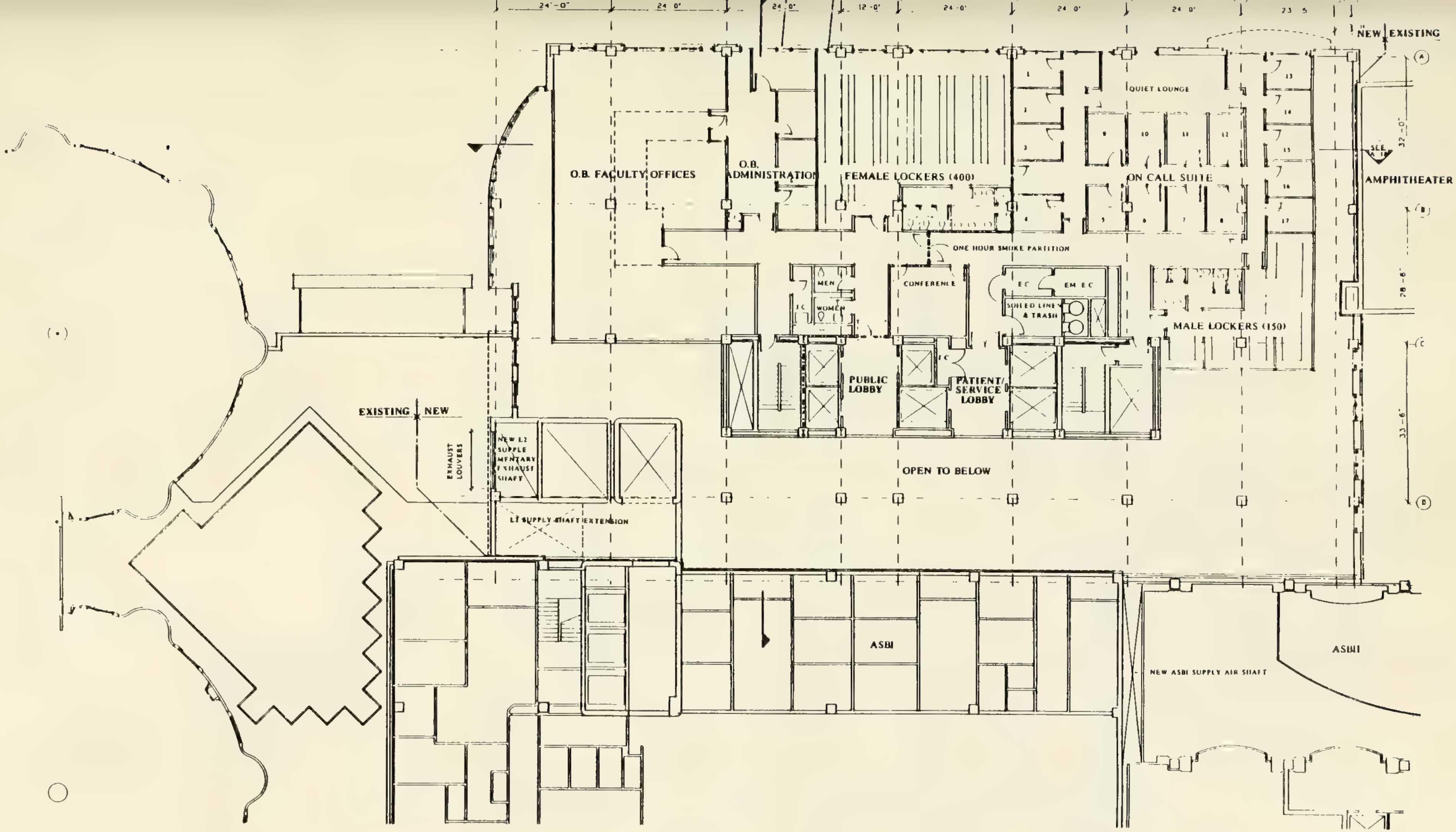


FIGURE IV-37: 3/4 INTERMEDIATE LEVEL FLOOR PLAN

BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY*

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

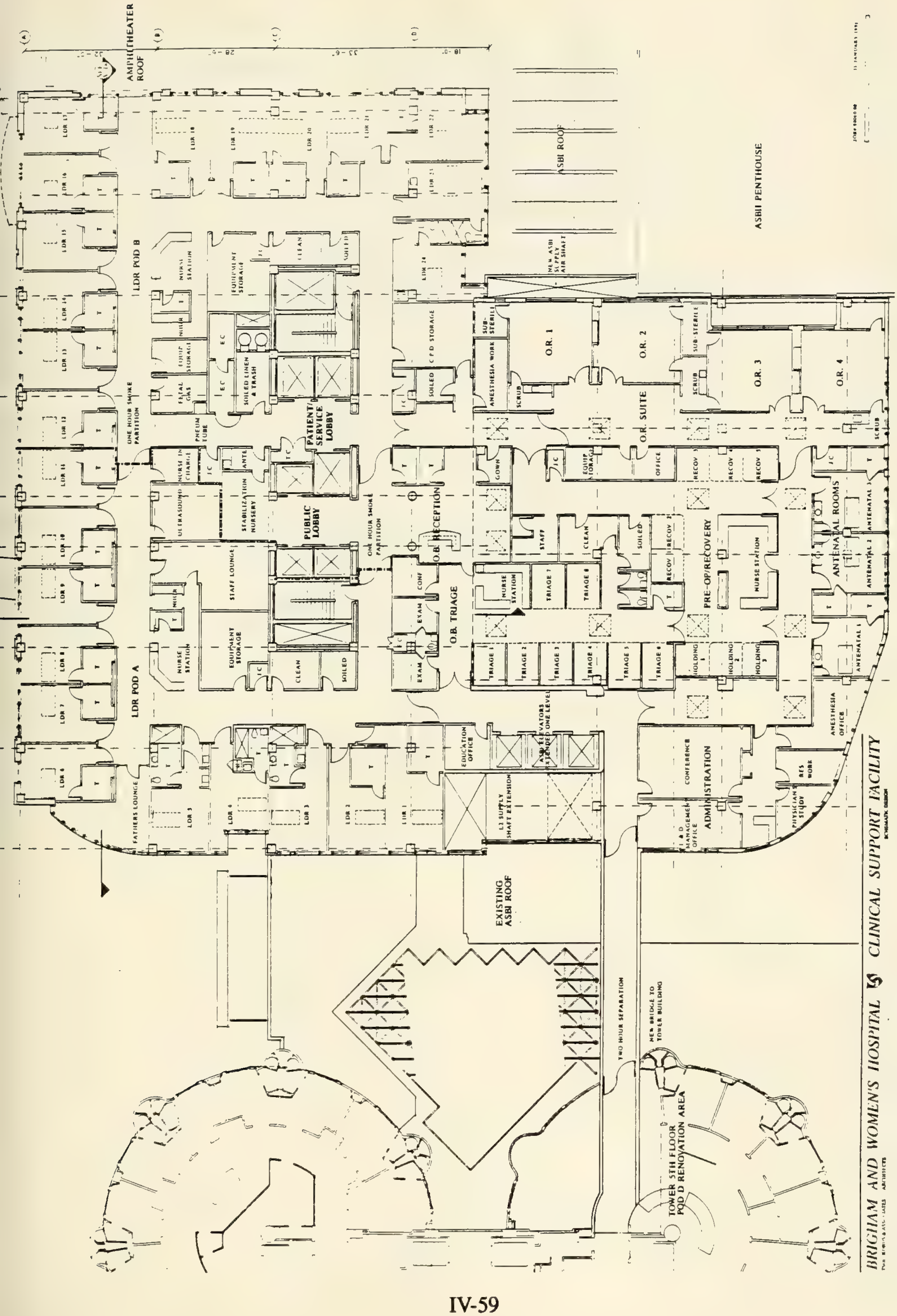


FIGURE IV-38: LEVEL 4 PLAN (LDR)

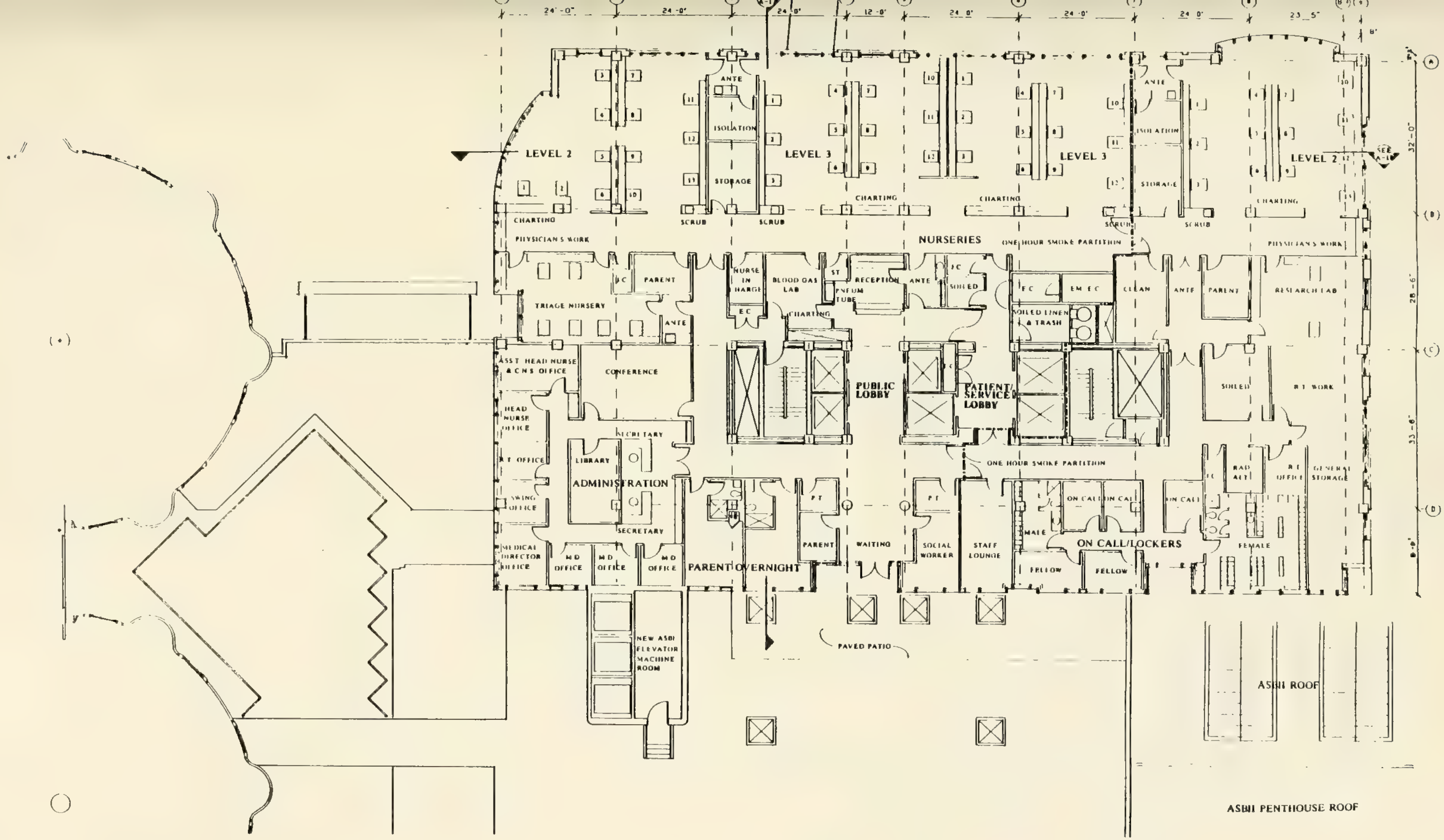


FIGURE IV-39: LEVEL 5 PLAN (NICU)

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

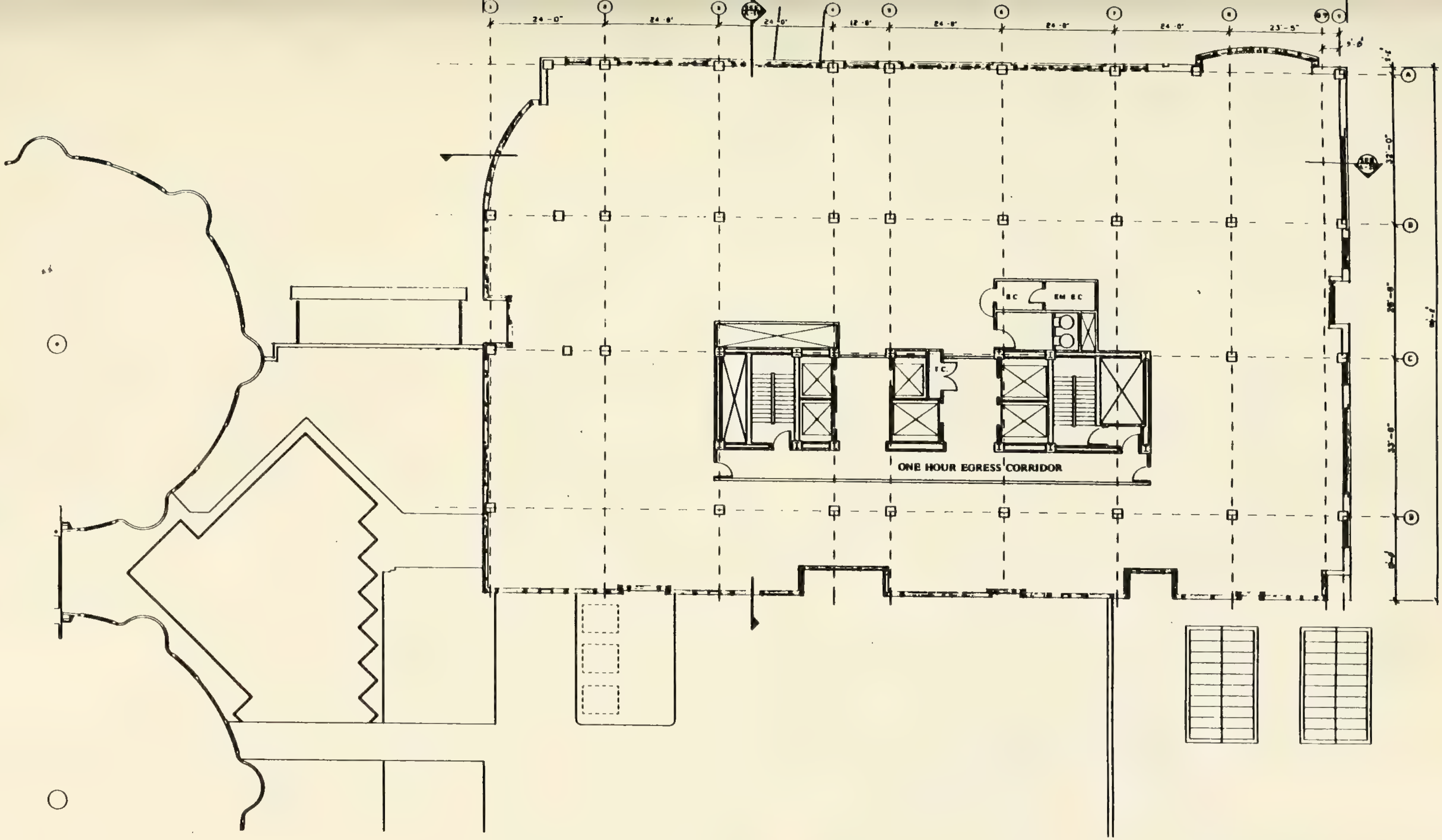


FIGURE IV-40: LEVEL 6-9 PLAN (INITIAL PHASE)

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

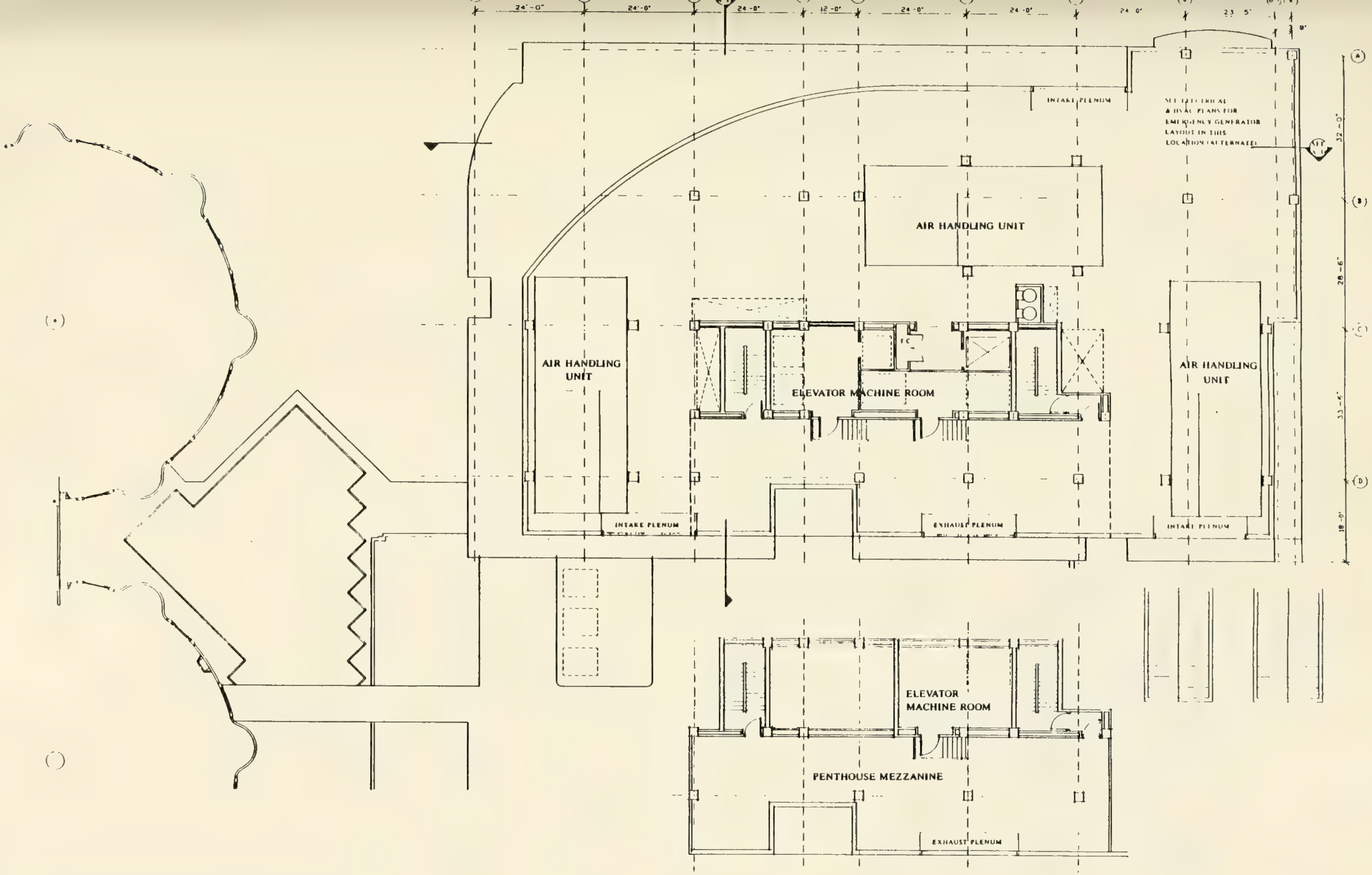


FIGURE IV-41: PENTHOUSE LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY
TSOI / KOBUS & ASSOCIATES ARCHITECTS
SCHEMATIC DESIGN

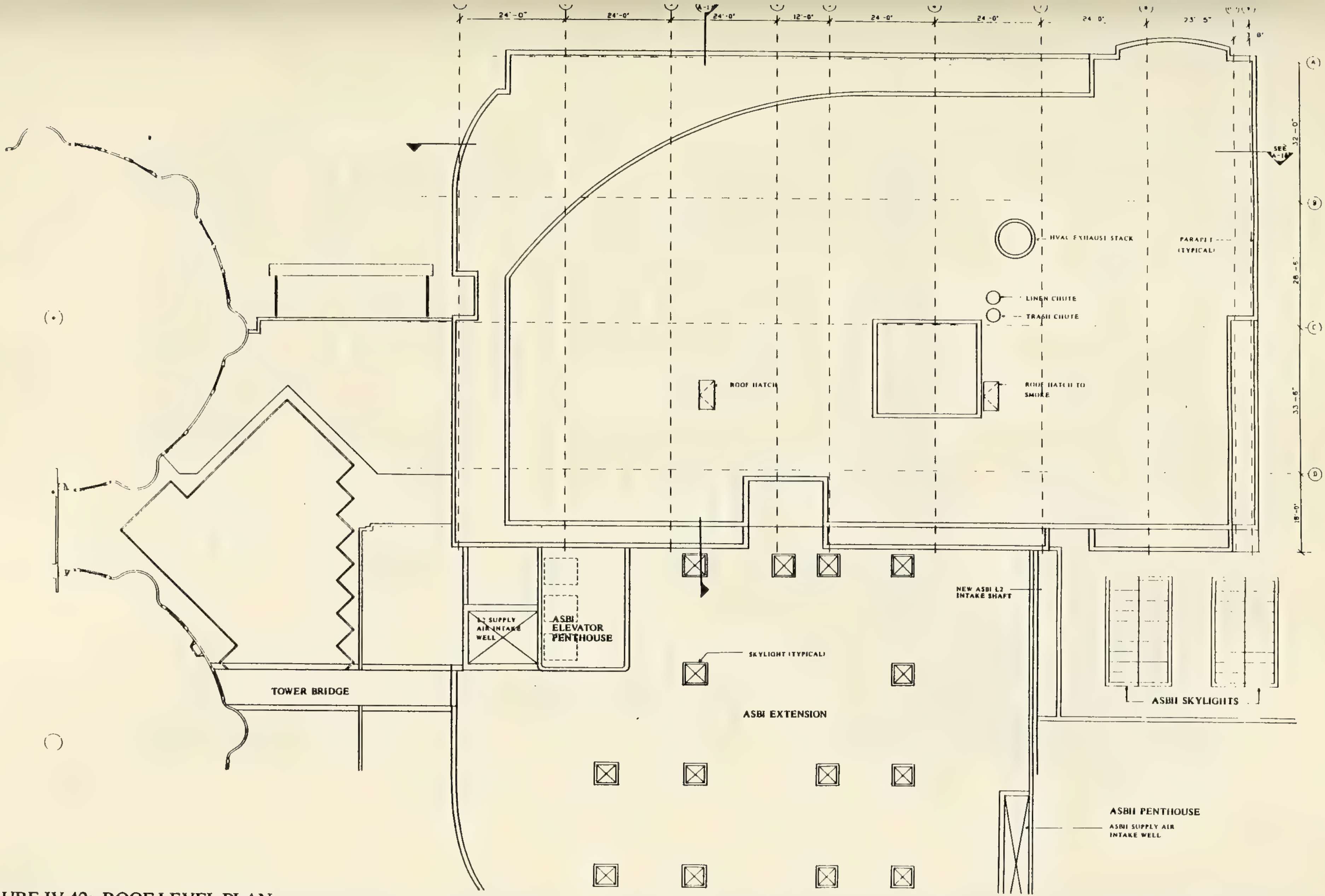


FIGURE IV-42: ROOF LEVEL PLAN

BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY*

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN [illegible] 11 JANUARY 1991

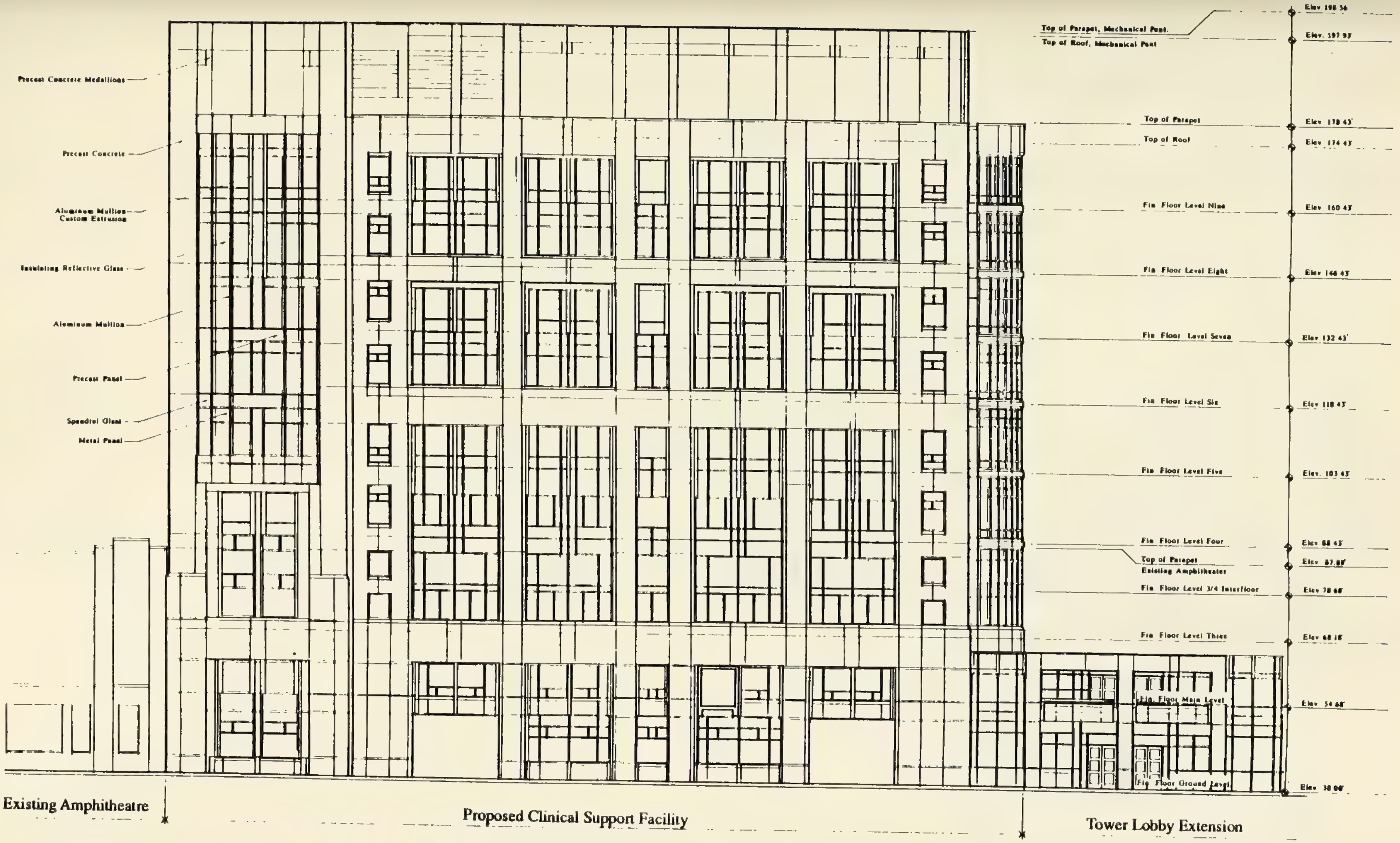


FIGURE IV-43: NORTH ELEVATION

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

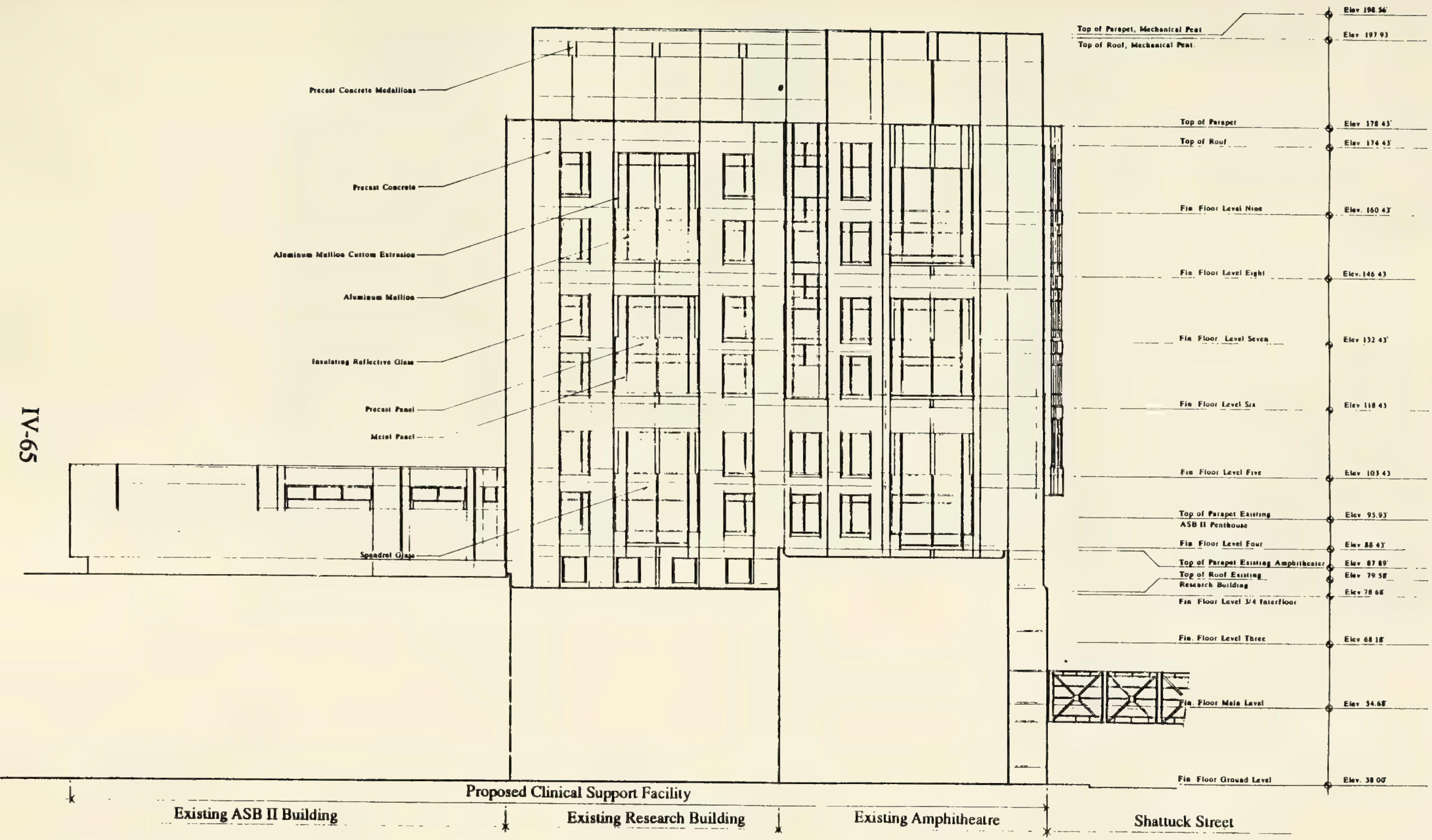


FIGURE IV-44: EAST ELEVATION

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY
TSOI / KOBUS & ASSOCIATES ARCHITECTS
SCHEMATIC DESIGN

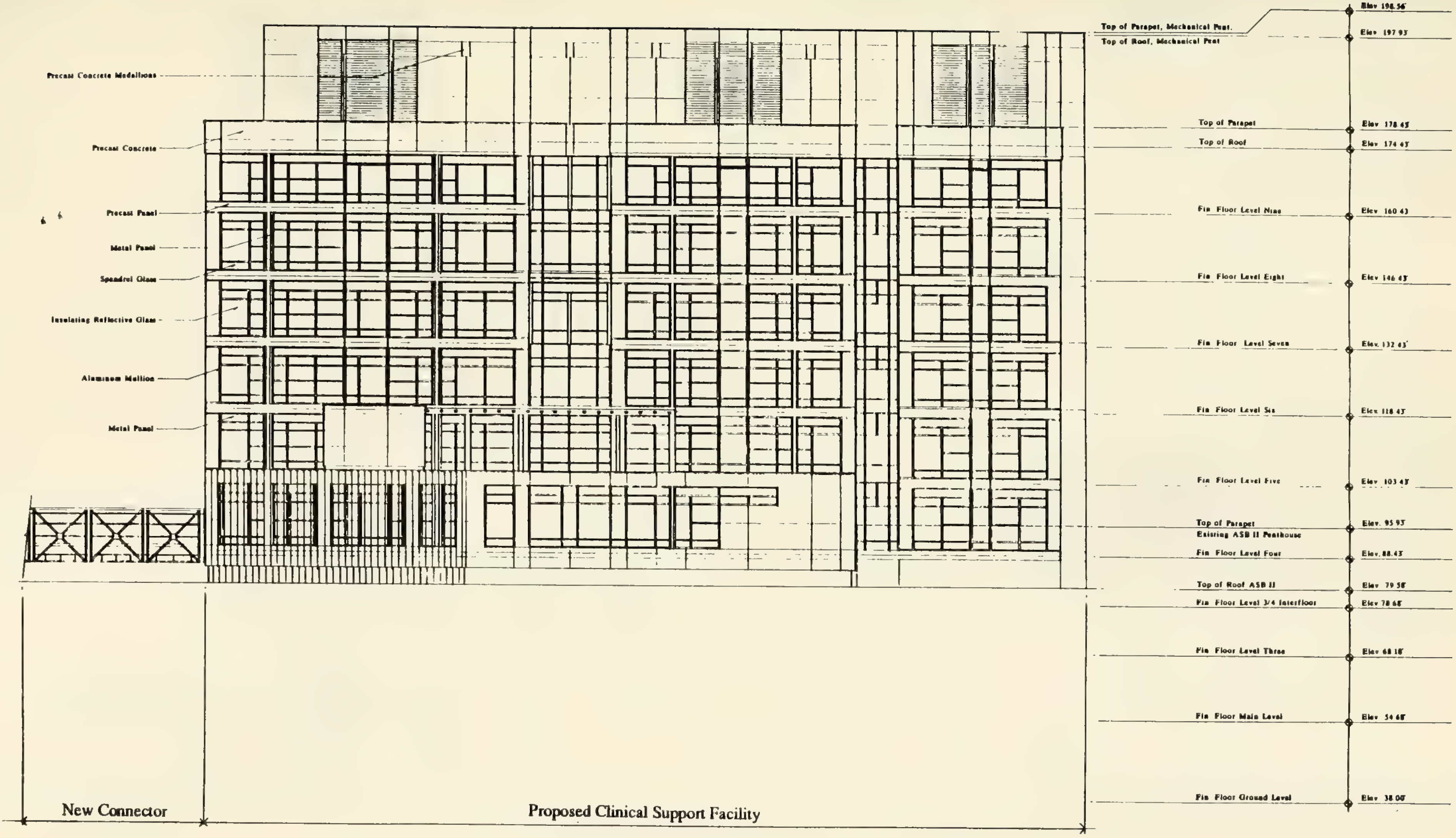


FIGURE IV-45: SOUTH ELEVATION

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY
TSOI / KOBUS & ASSOCIATES ARCHITECTS
SCHEMATIC DESIGN [illegible] 11 JANUARY 1991

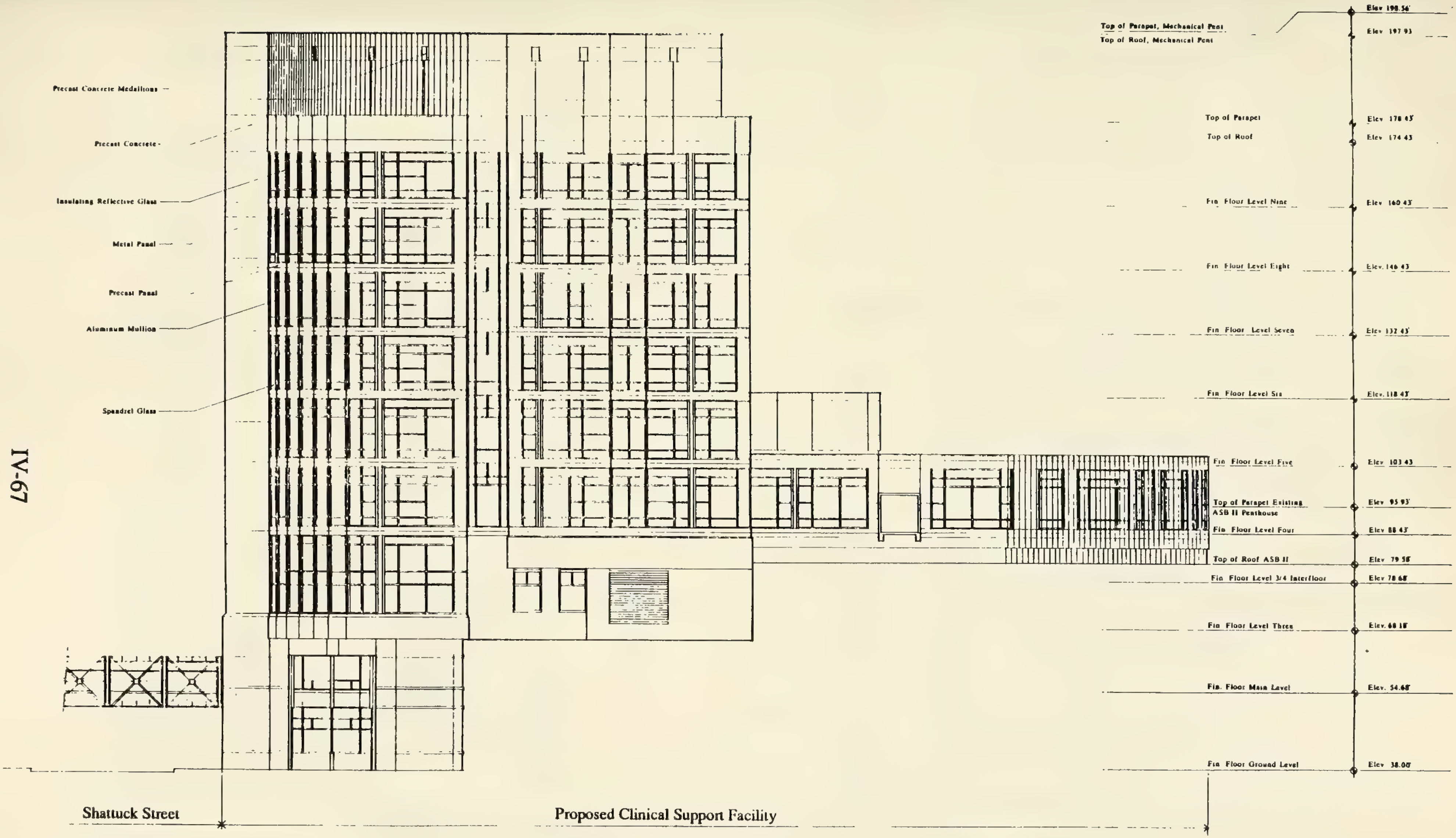


FIGURE IV-46: WEST ELEVATION

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

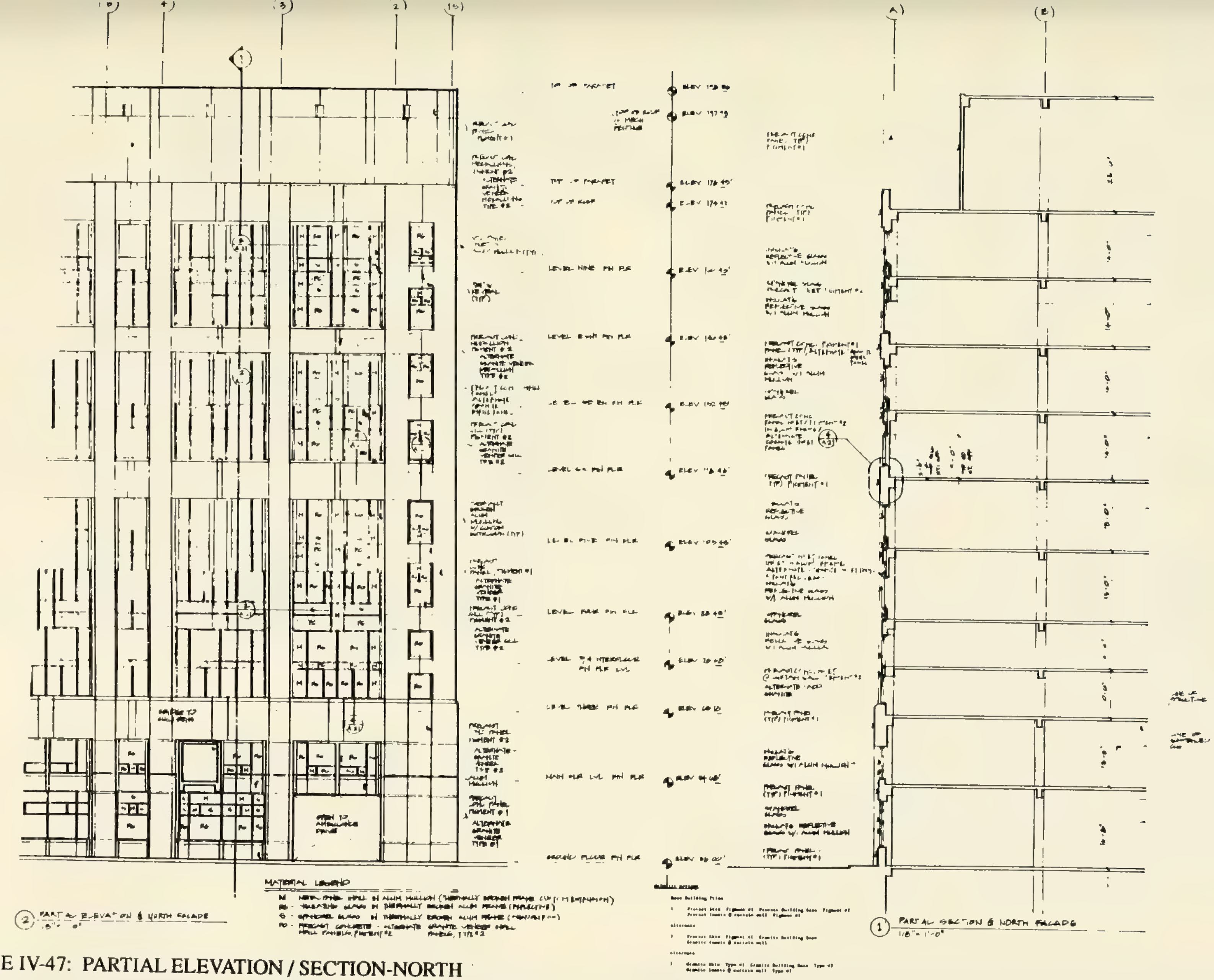


FIGURE IV-47: PARTIAL ELEVATION / SECTION-NORTH

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

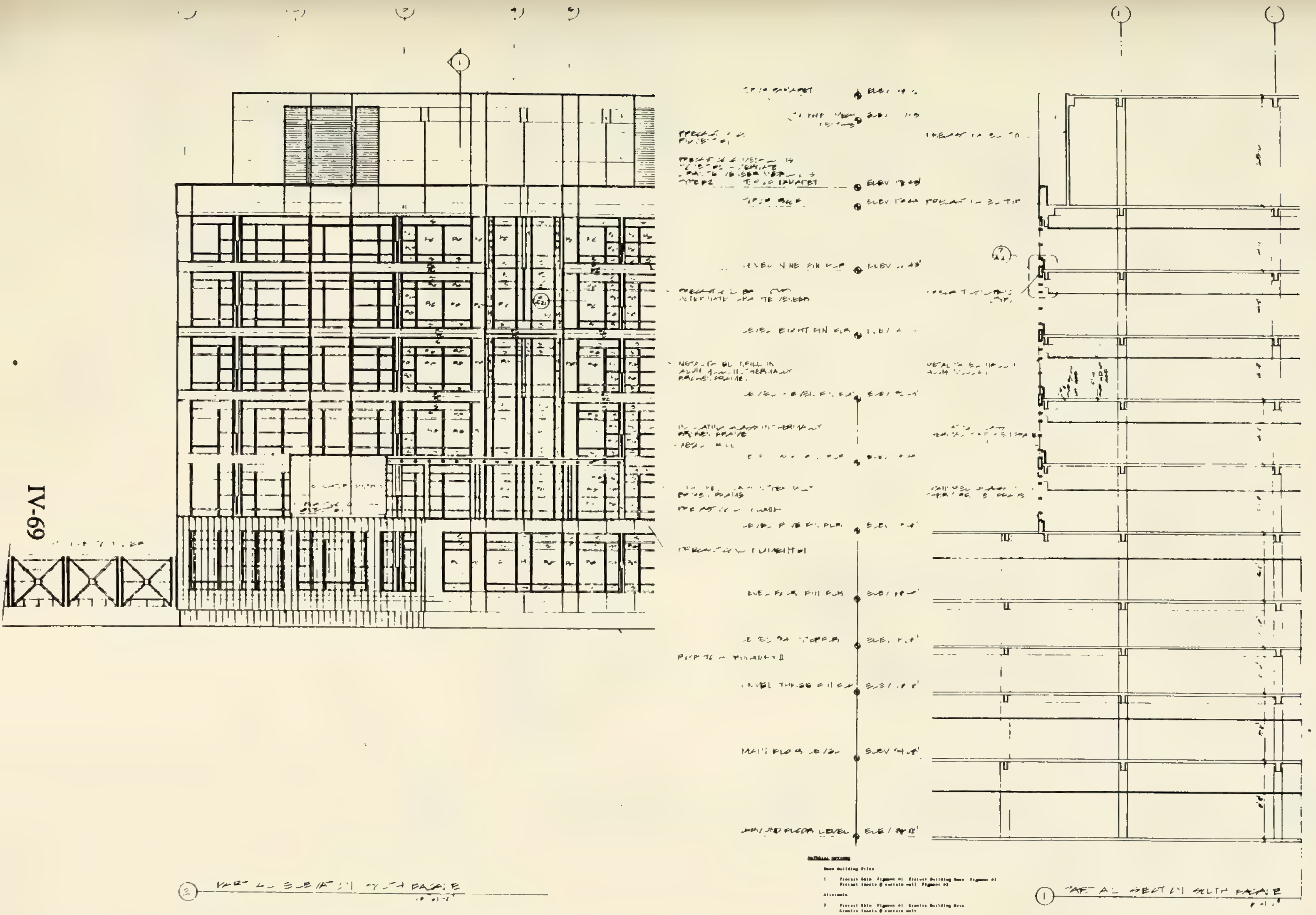


FIGURE IV-48: PARTIAL ELEVATION / SECTION-SOUTH

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

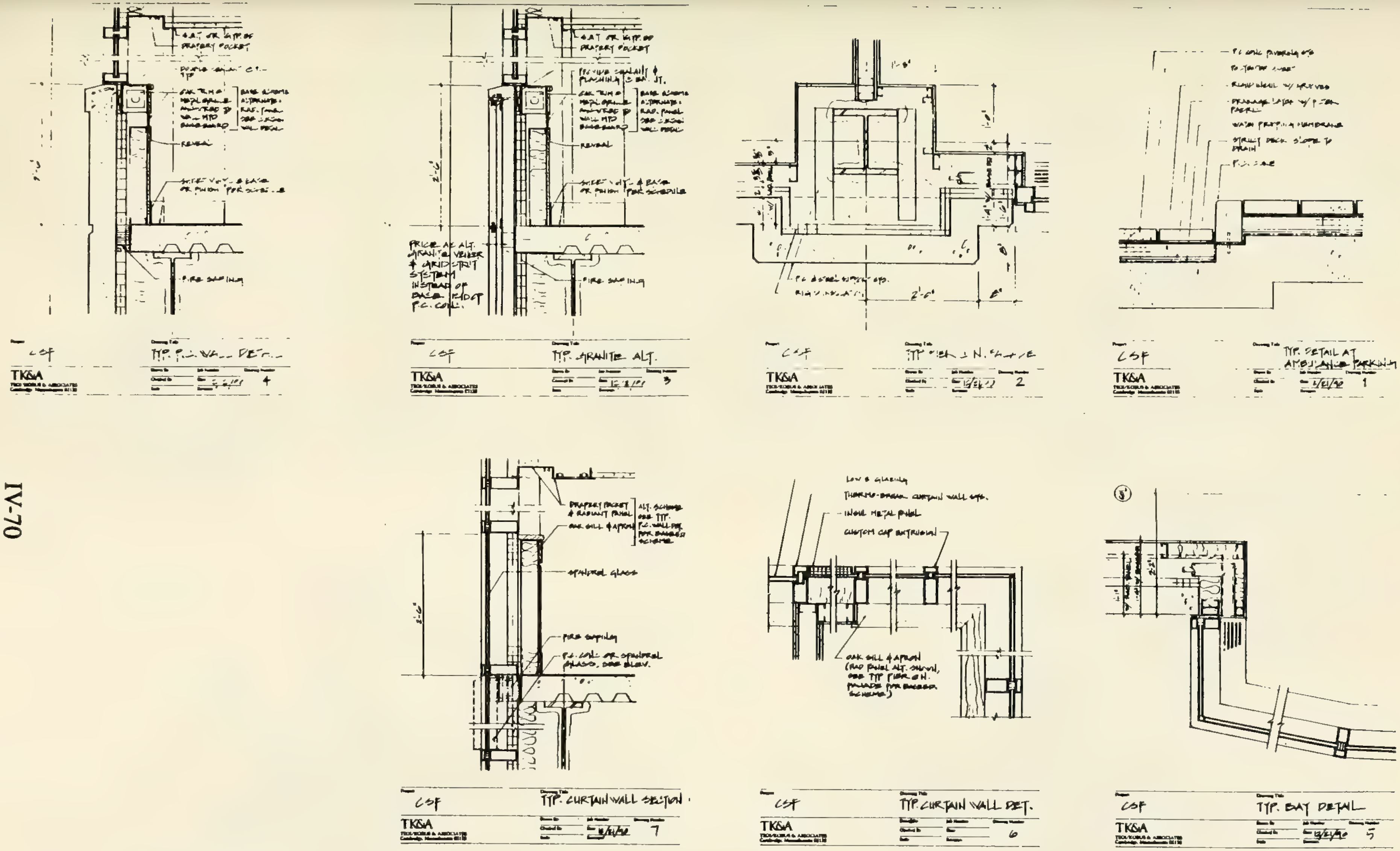

GAT. OR GYP. BD. DRAPERY POCKET
TYP.
OAK TRIM & METAL GRILLE MOUNTED @ WALL MTD BASEBOARD
BASE SCHEME ALTERNATE: RAD. PANEL SEE ZONE WALL PANEL
REVEAL
SHEET VINYL & BASE OR PLINTH PER SCHEDULE
FIRE SAFING
CSF
TK&A
TSOI/KOBUS & ASSOCIATES
Cambridge, Massachusetts 02138
TYP. P.C. WALL DET.
4
GAT. OR GYP. BD. DRAPERY POCKET
PROVIDE SEALANT & FLASHING @ BAR JT.
OAK TRIM & METAL GRILLE MOUNTED @ WALL MTD BASEBOARD
BASE SCHEME ALTERNATE: RAD. PANEL SEE ZONE WALL PANEL
REVEAL
SHEET VINYL & BASE OR PLINTH PER SCHEDULE
PRICE AS ALT. GRANITE VENEER & GRID STRUT SYSTEM INSTEAD OF BASE BID P.C. CONC.
FIRE SAFING
2'-6"
CSF
TK&A
TYP. GRANITE ALT.
3
1'-8"
2'-6"
8"
P.C. & STEEL SUPPORT ETC.
RIGID INSULATION
CSF
TK&A
TYP. PIER @ N. FACADE
2
P.C. CONC. PAVERS ETC.
TO TOP OF CURB
RETAINING WALL W/ GRAVEL
DRAINAGE LAYER W/ P. FILTER FABRIC
WATERPROOFING MEMBRANE
STRUCT. DECK SLOPE TO DRAIN
P.C. SLAB
CSF
TK&A
TYP. DETAIL AT AMBULANCE PARKING
1/21/90
1
DRAPERY POCKET & RADIANT PANEL
OAK SILL & APRON
ALT. SCHEME SEE TYP. P.C. WALL DET. FOR BASELESS SCHEME
SPANDREL GLASS
FIRE SAFING
P.C. CONC. OR SPANDREL GLASS, SEE ELEV.
3'-6"
CSF
TK&A
TYP. CURTAIN WALL SECTION
7
LOW E GLAZING
THERMO-BREAK CURTAIN WALL SYS.
INSUL METAL PANEL
CUSTOM CAP EXTRUSION
OAK SILL & APRON (RAD PANEL ALT. SHOWN, SEE TYP. PIER @ N. FACADE FOR BASELESS SCHEME)
CSF
TK&A
TYP. CURTAIN WALL DET.
6
5'
CSF
TK&A
TYP. BAY DETAIL
5

FIGURE IV-49: WALL SECTION DETAILS

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

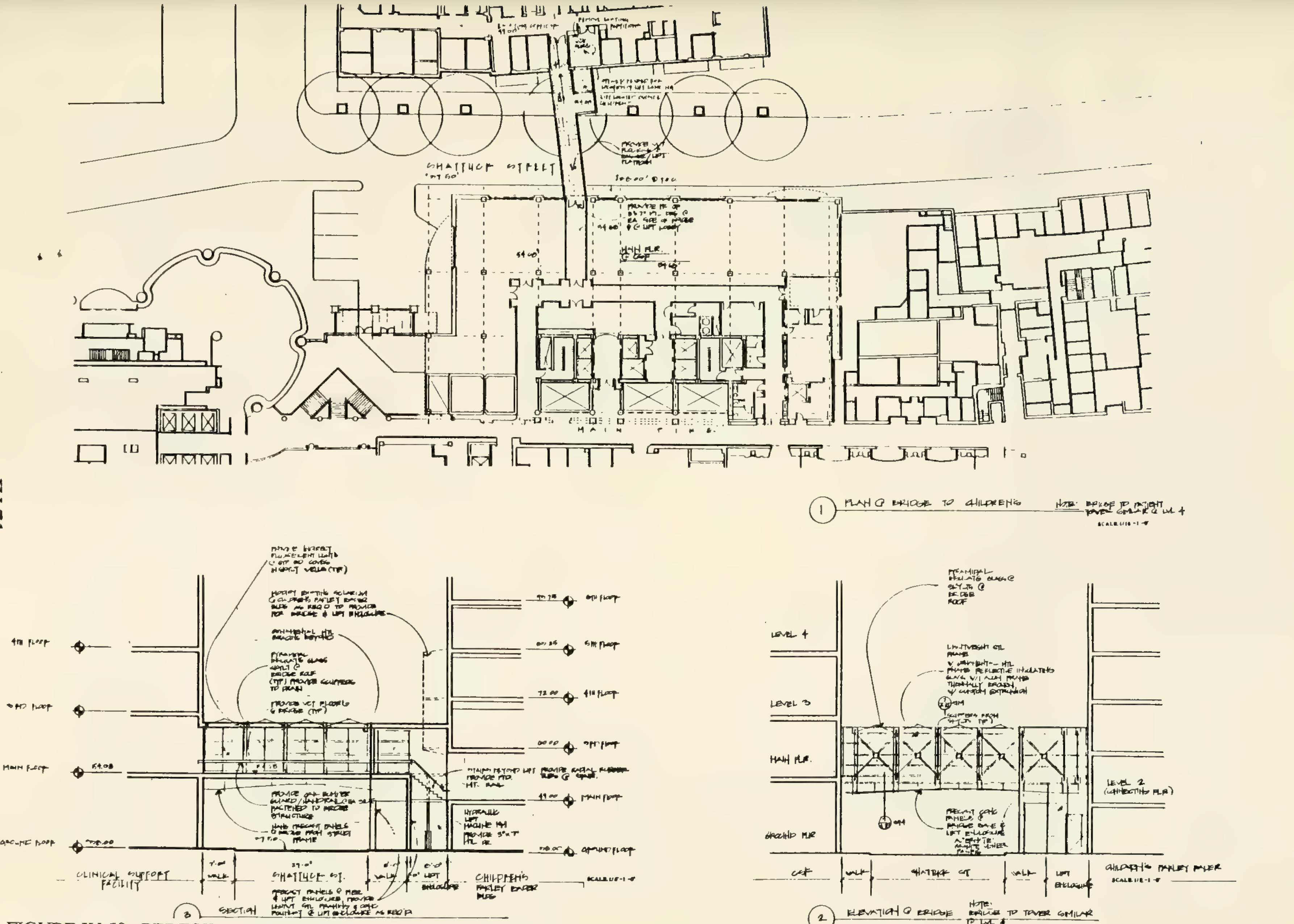


FIGURE IV-50: PEDESTRIAN BRIDGE TO CHILDREN'S HOSPITAL

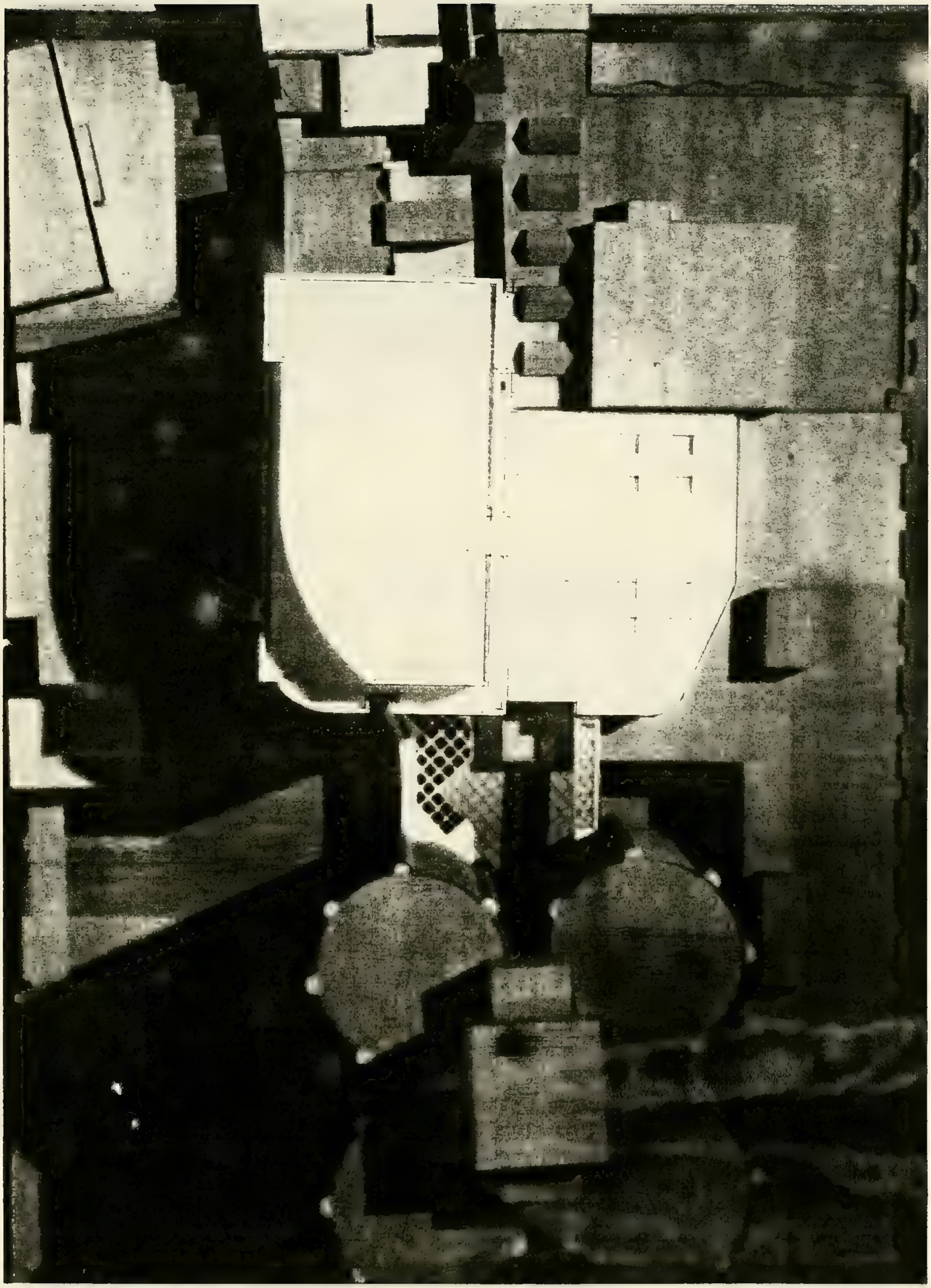
BRIGHAM AND WOMEN'S HOSPITAL *CLINICAL SUPPORT FACILITY*

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN 11 JANUARY 1991

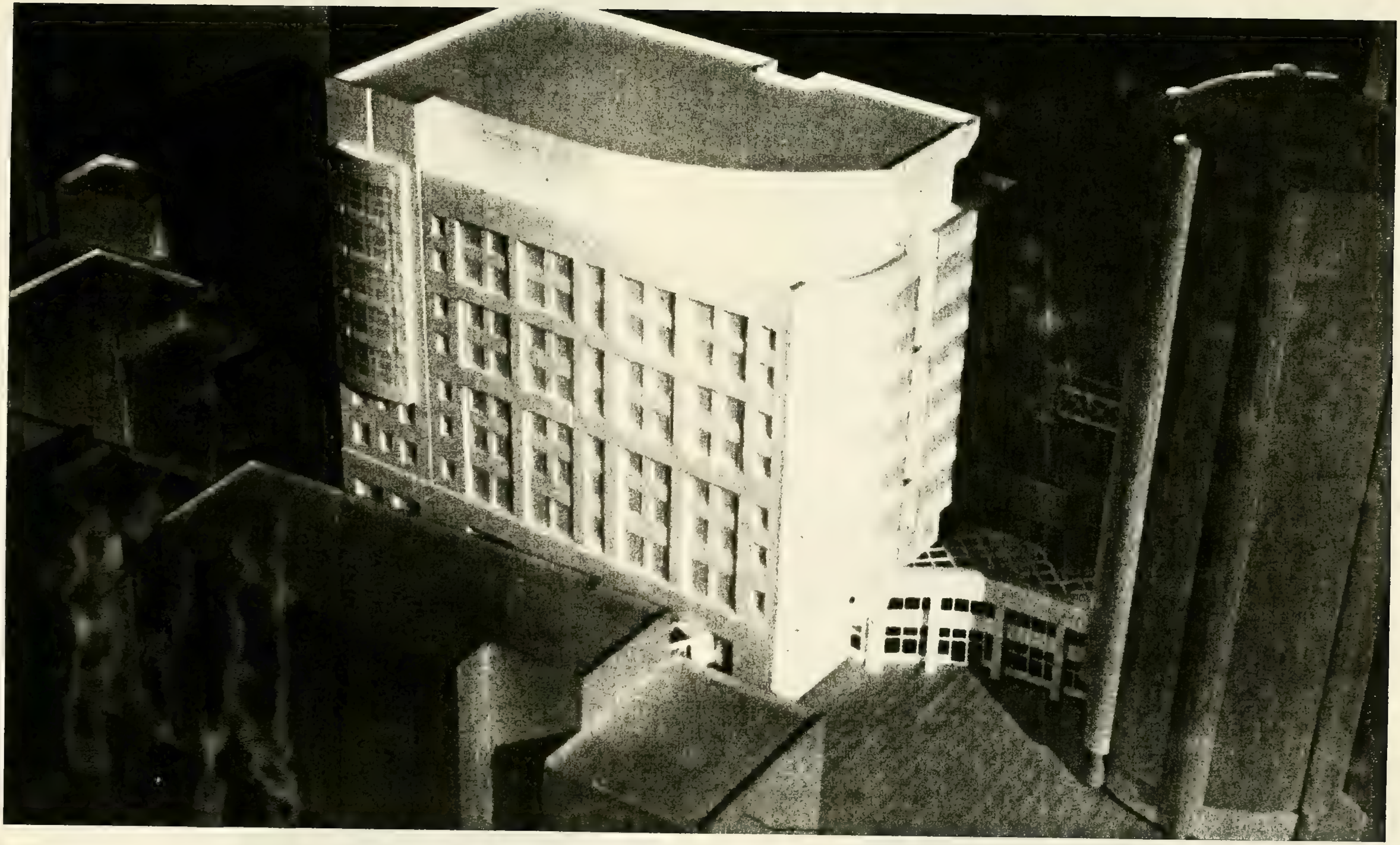
B W H

2.12 MODEL PHOTOGRAPHS

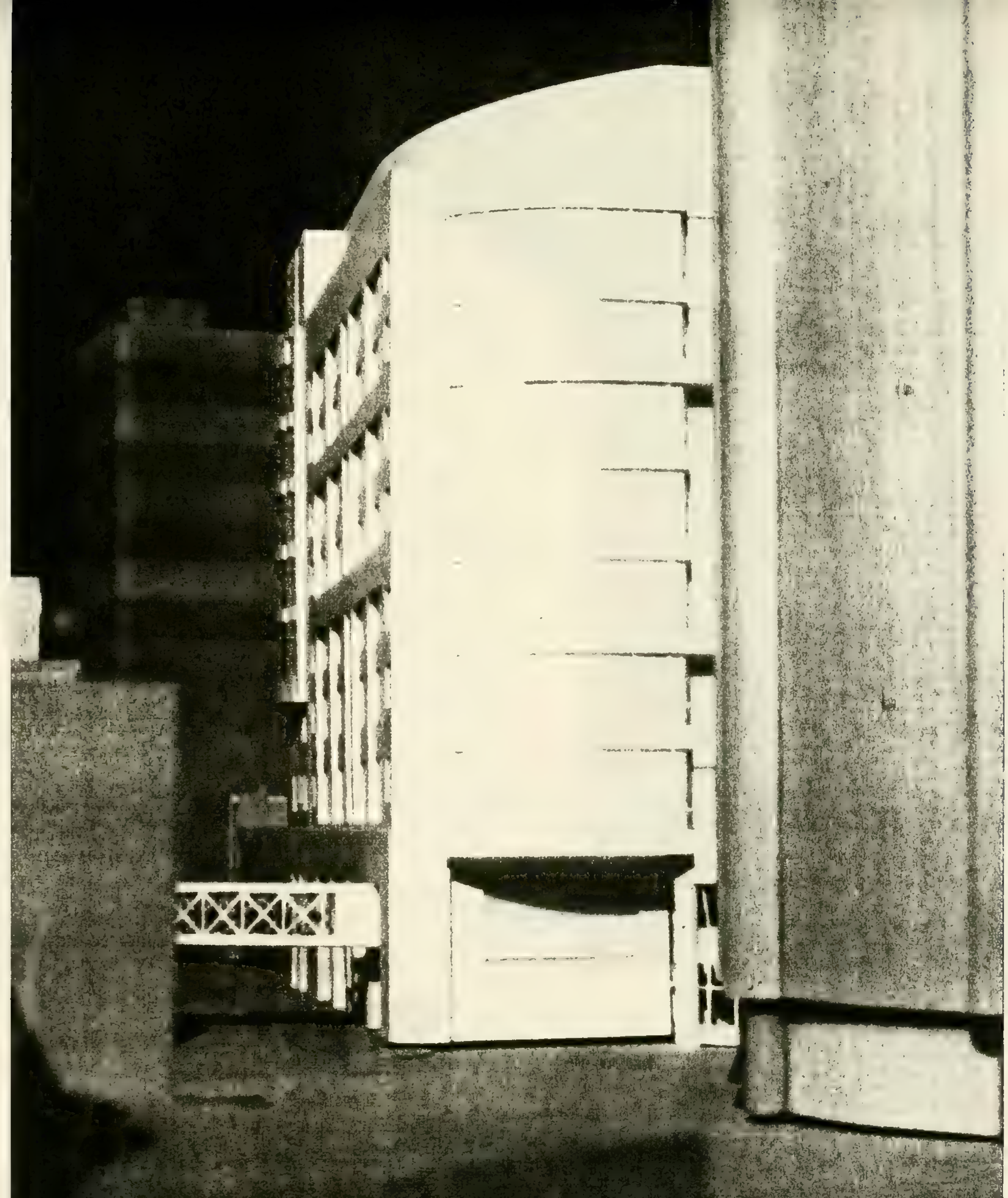


Plan View

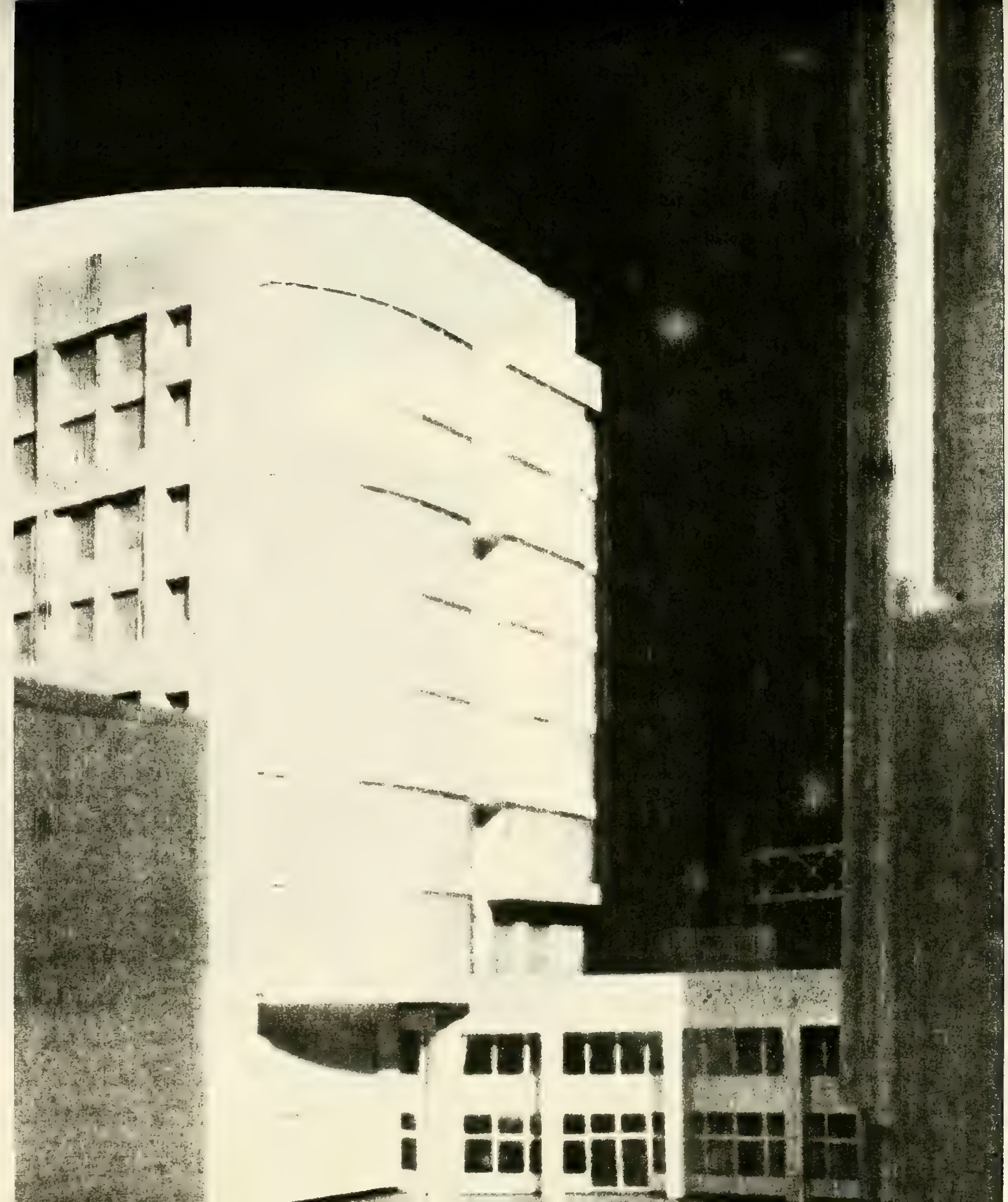
north



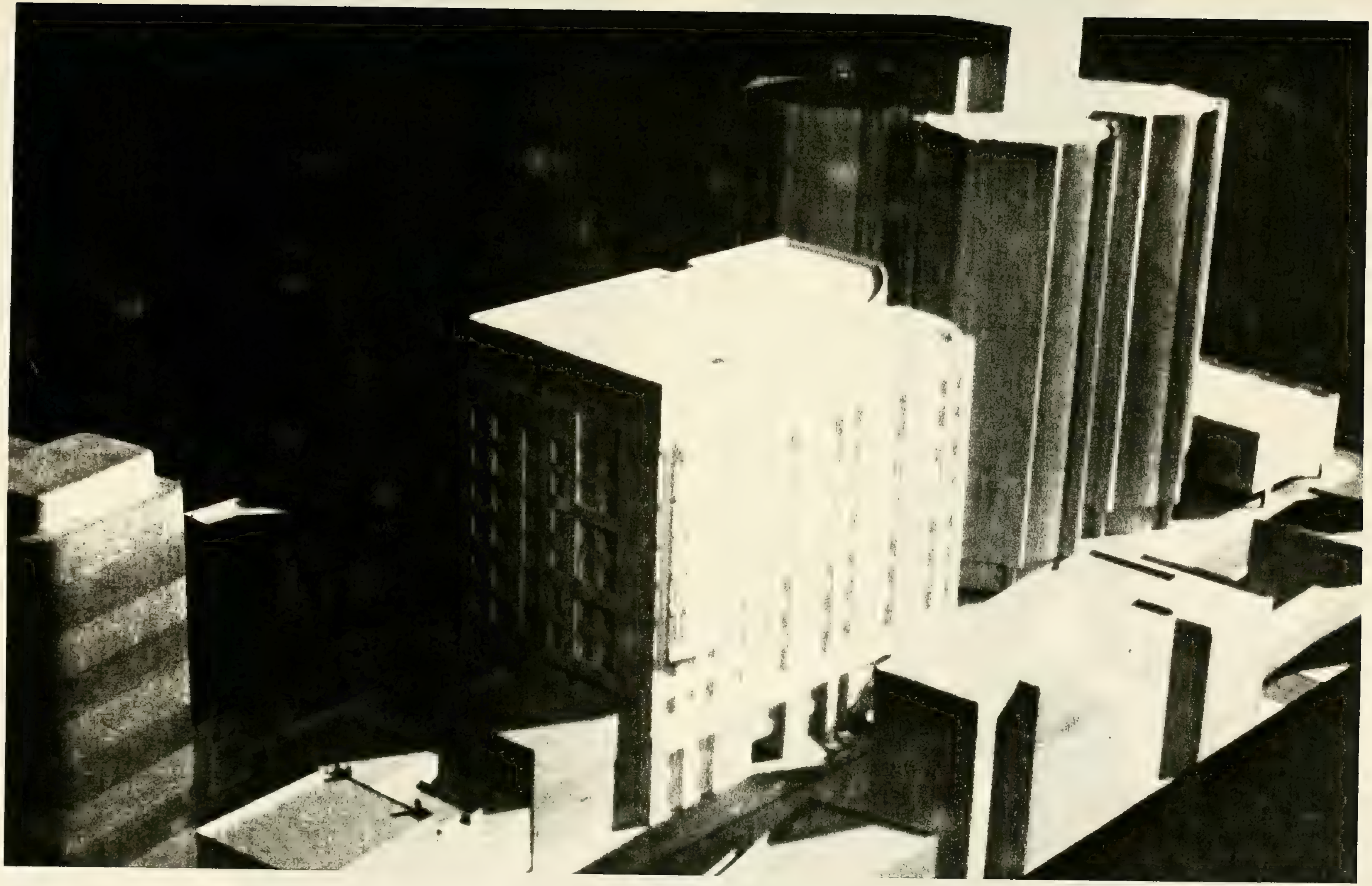
Aerial View of Northwest Corner



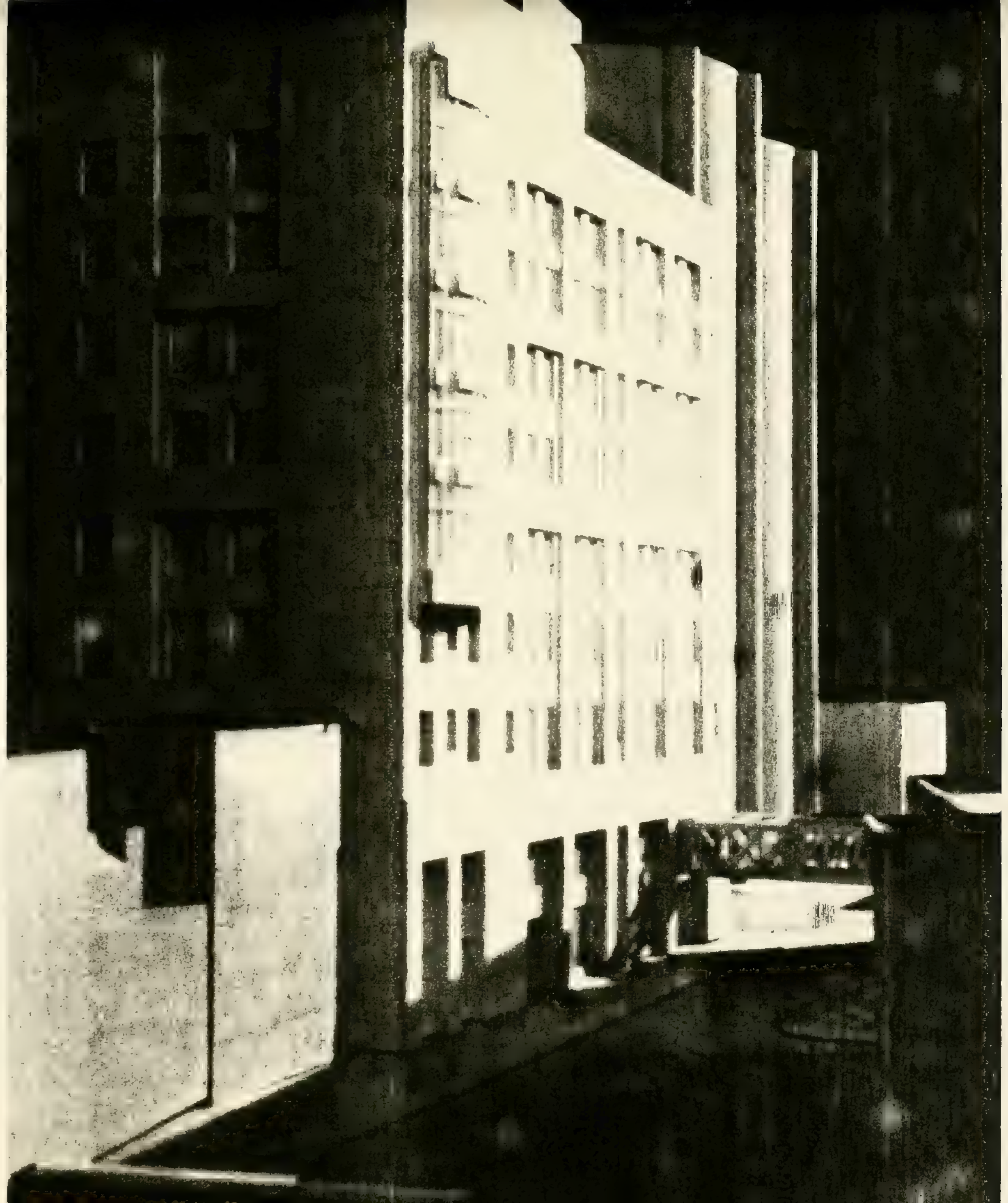
View of Northwest
Corner looking East
down Shattuck Street



View of Northwest
Corner at
Tower Lobby
Courtyard



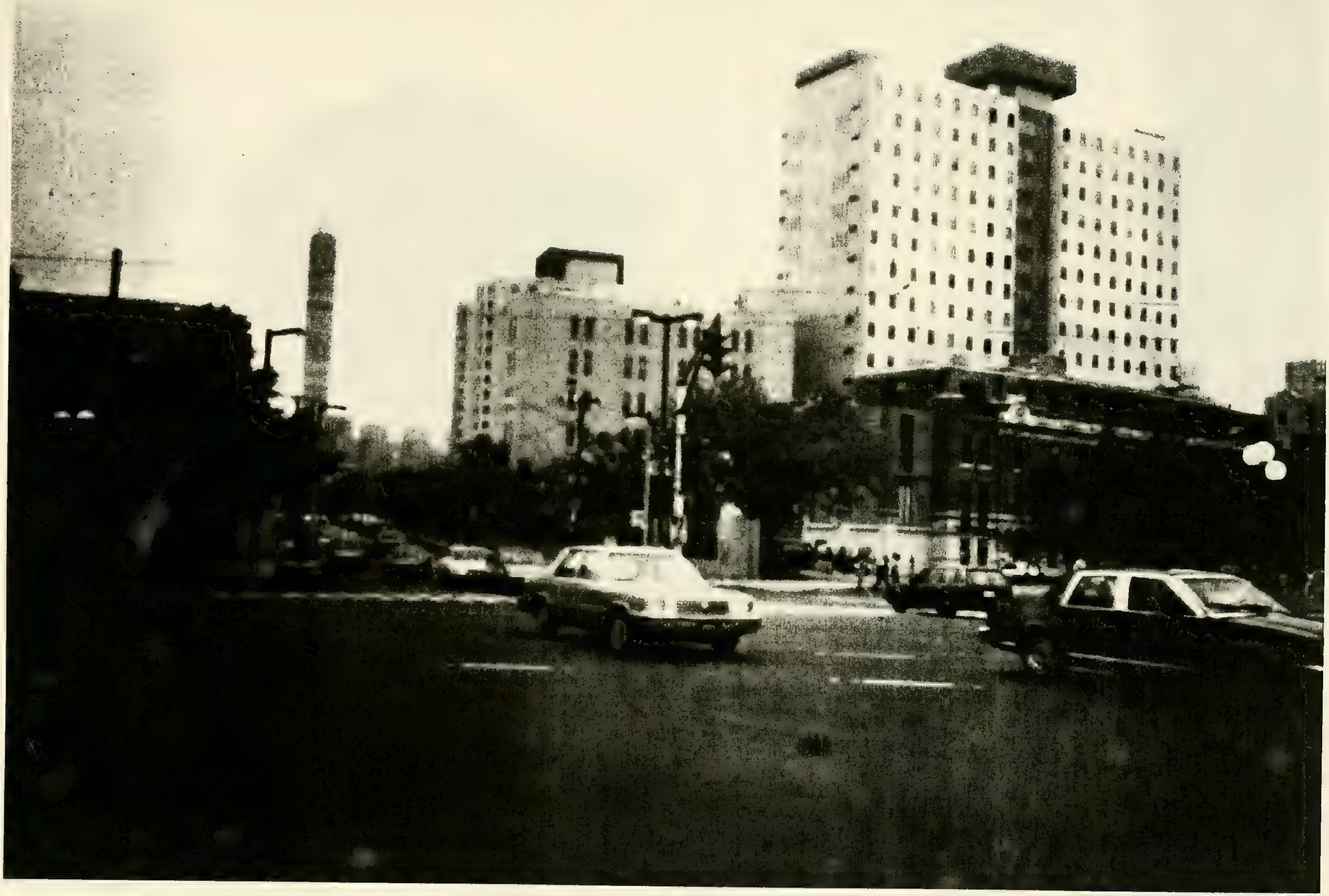
Aerial View of Northeast Corner



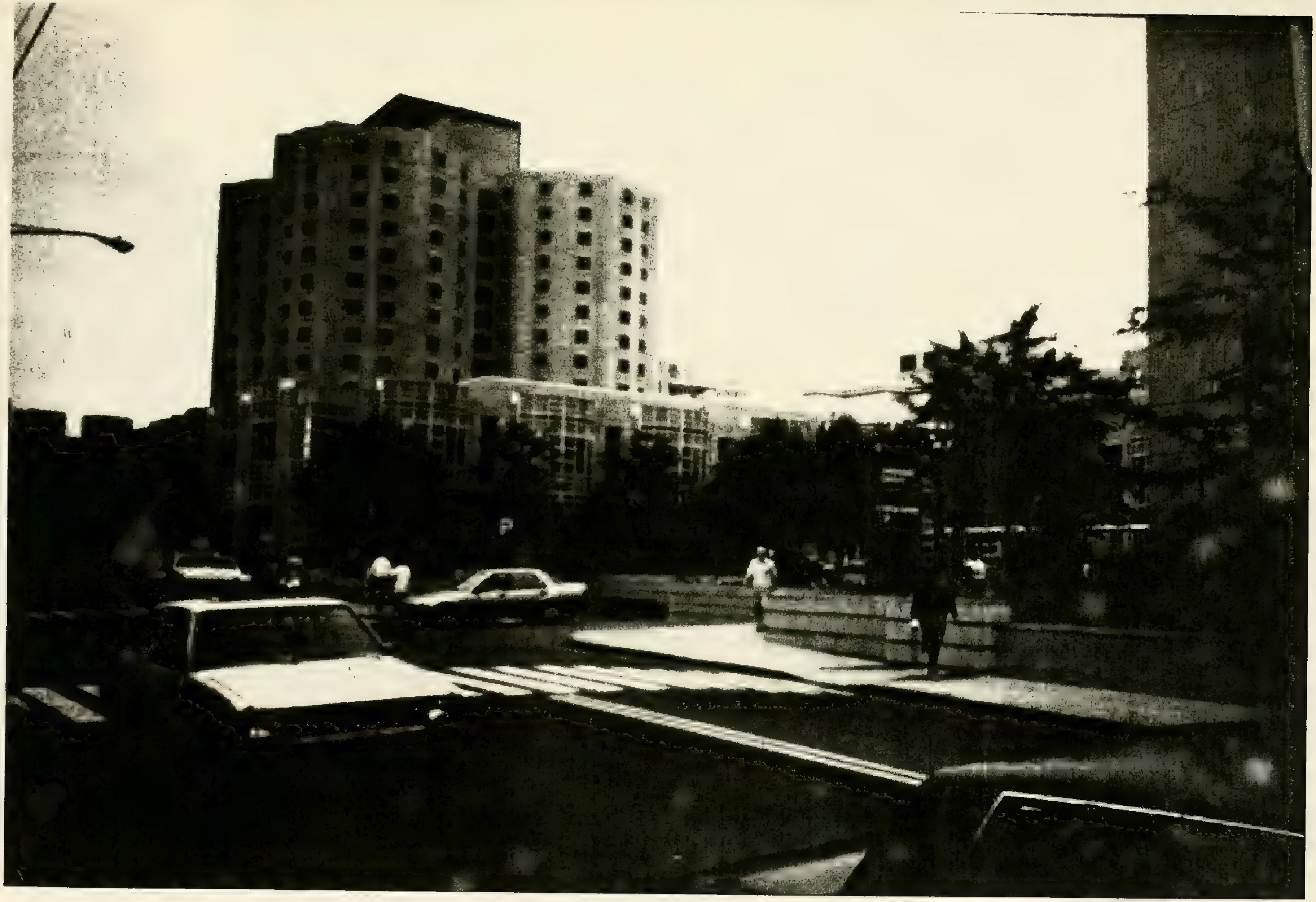
View of
Northeast Corner
looking West down
Shattuck Street

B W H

2.13 SITE PHOTOGRAPHS

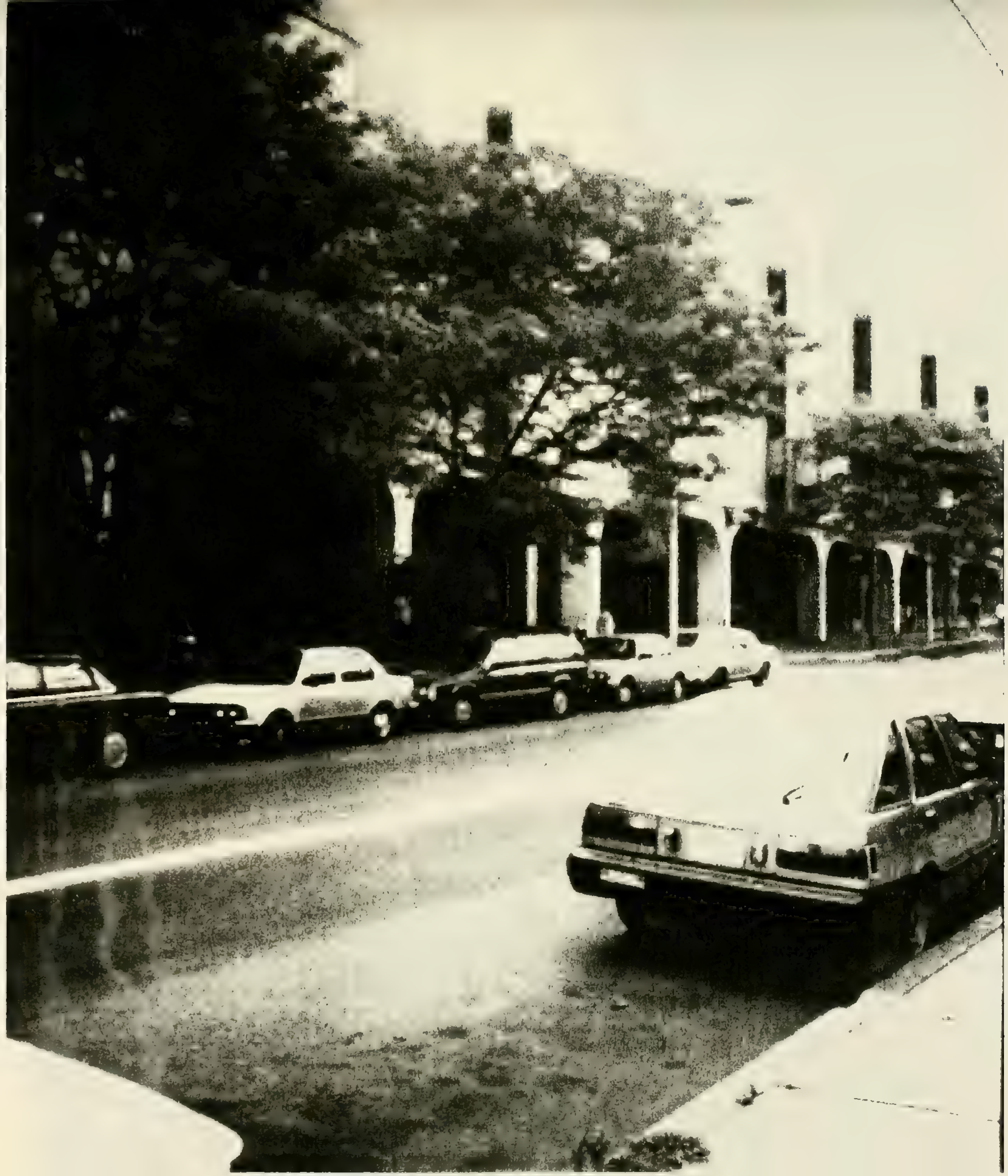


View on Huntington Avenue looking West down Francis Street

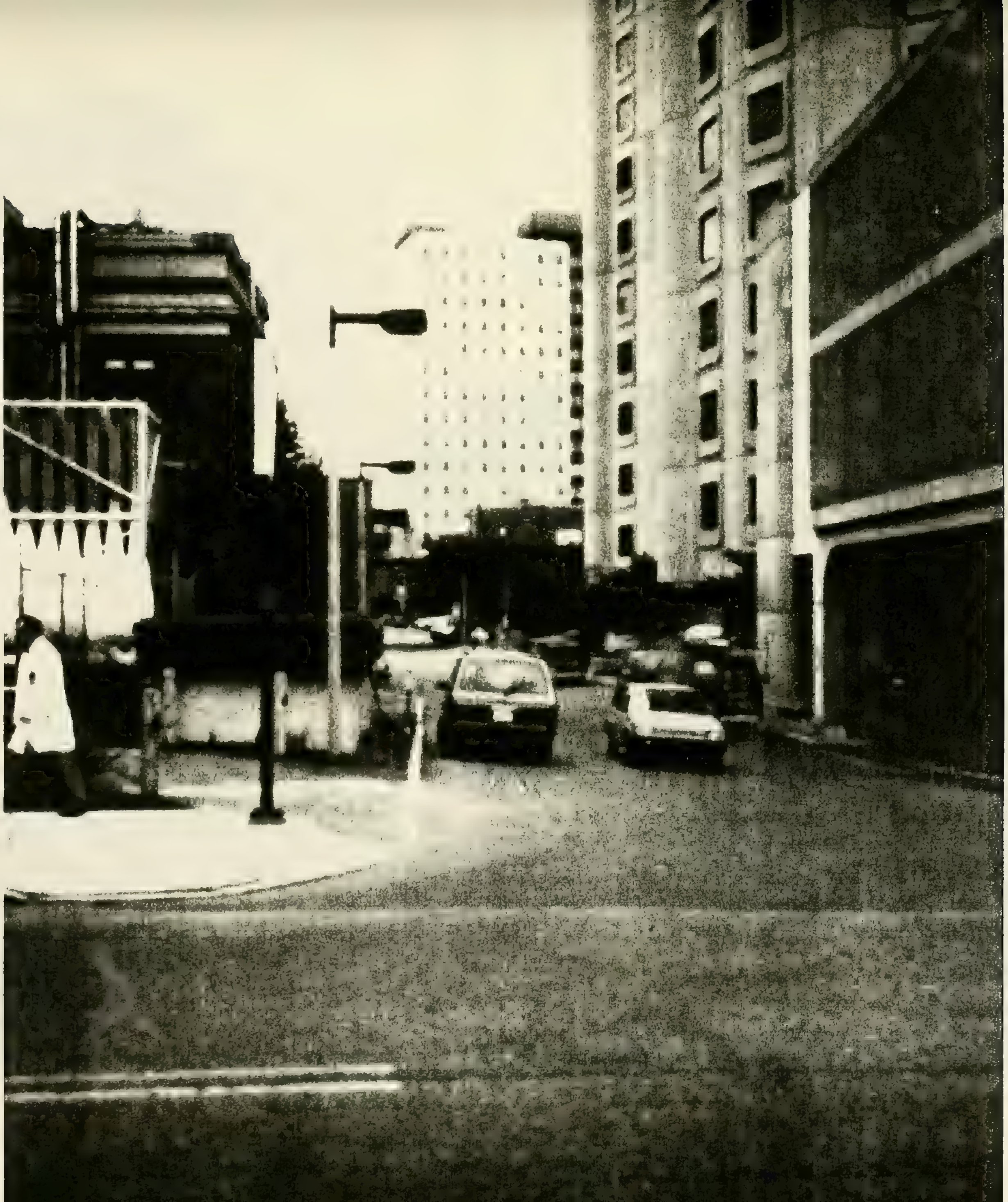


View looking Northwest on Francis Street from the ASB II Courtyard

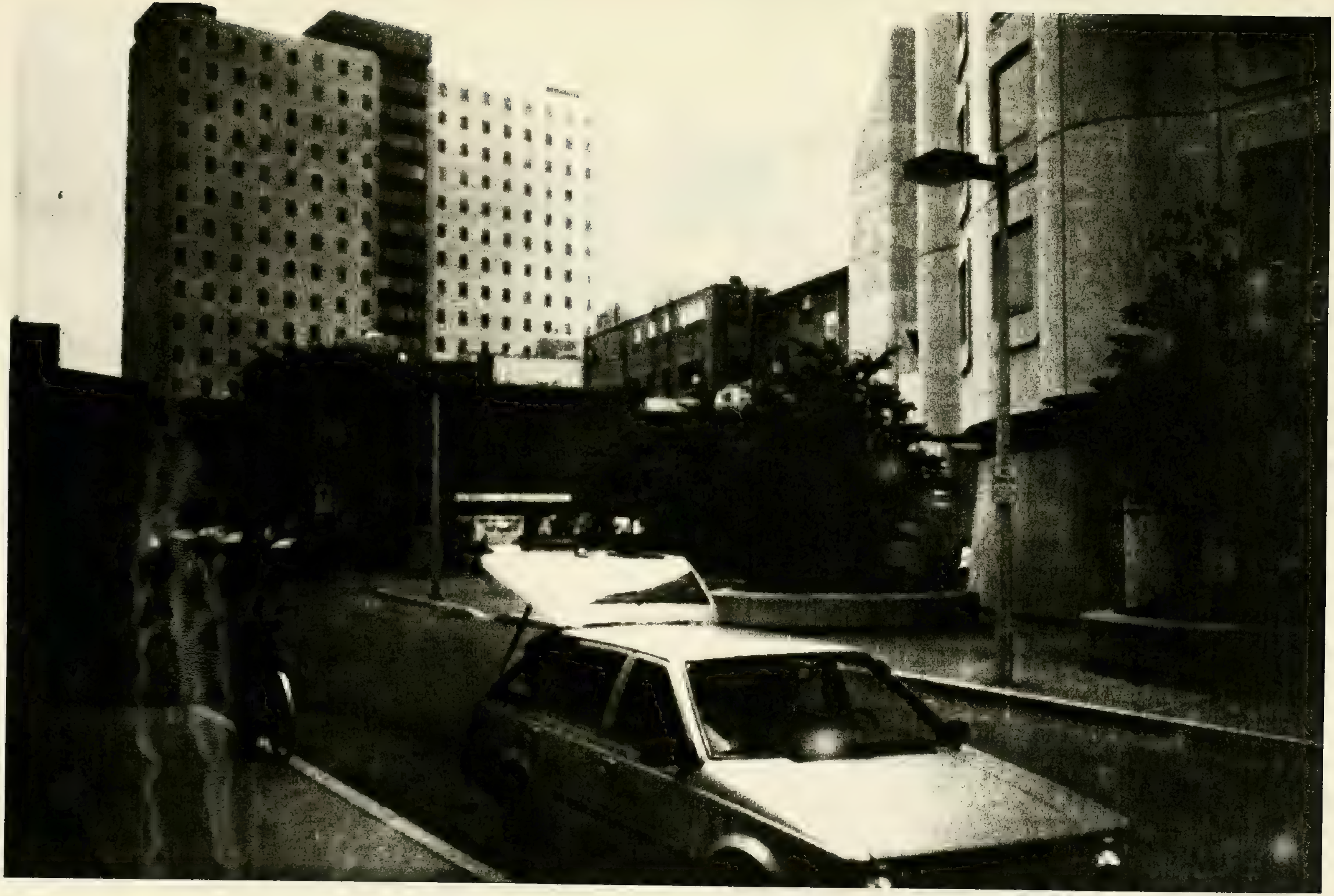
View looking North from Francis Street at the ASB II Courtyard



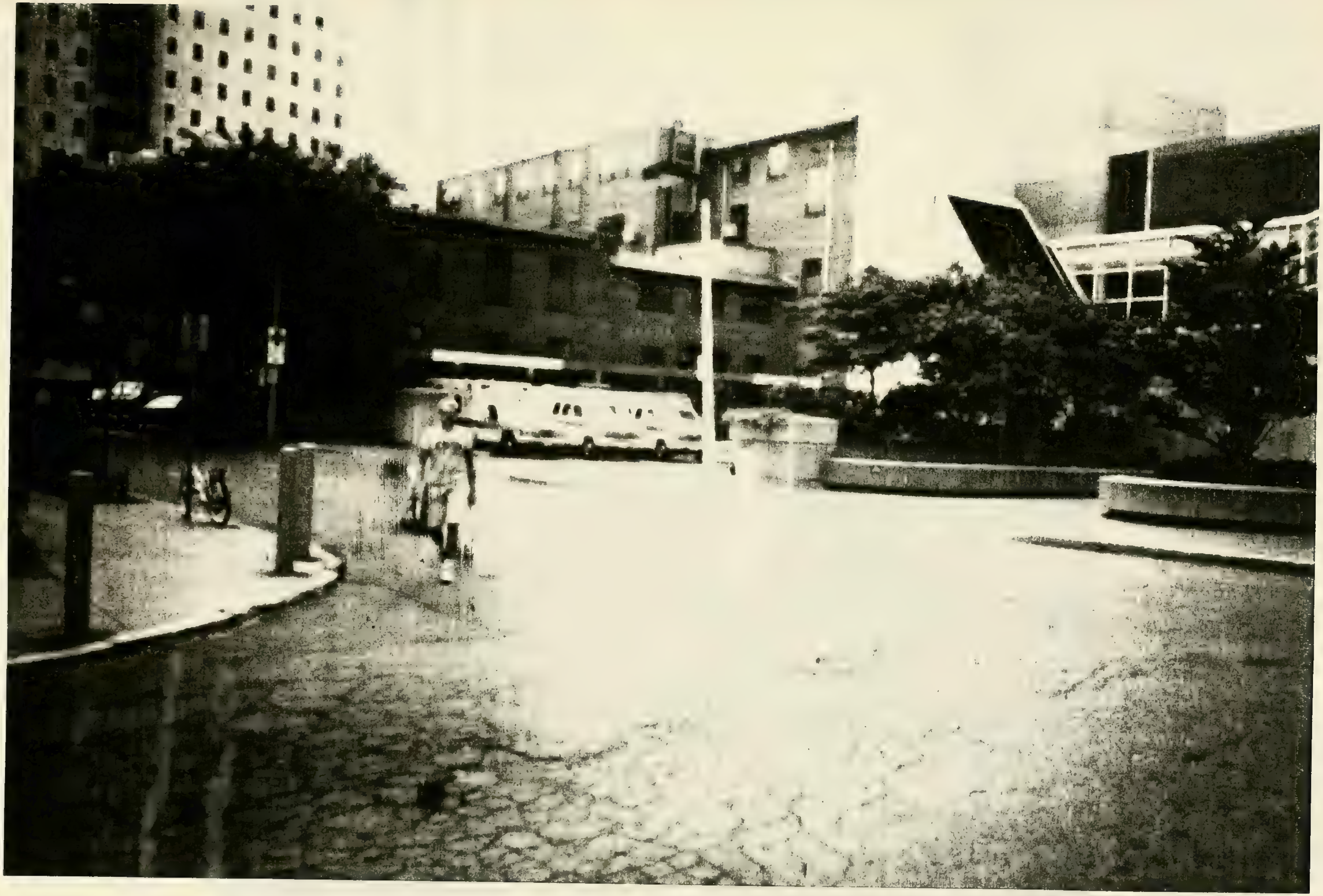
View looking East
on Francis Street
at Vining Street
Intersection



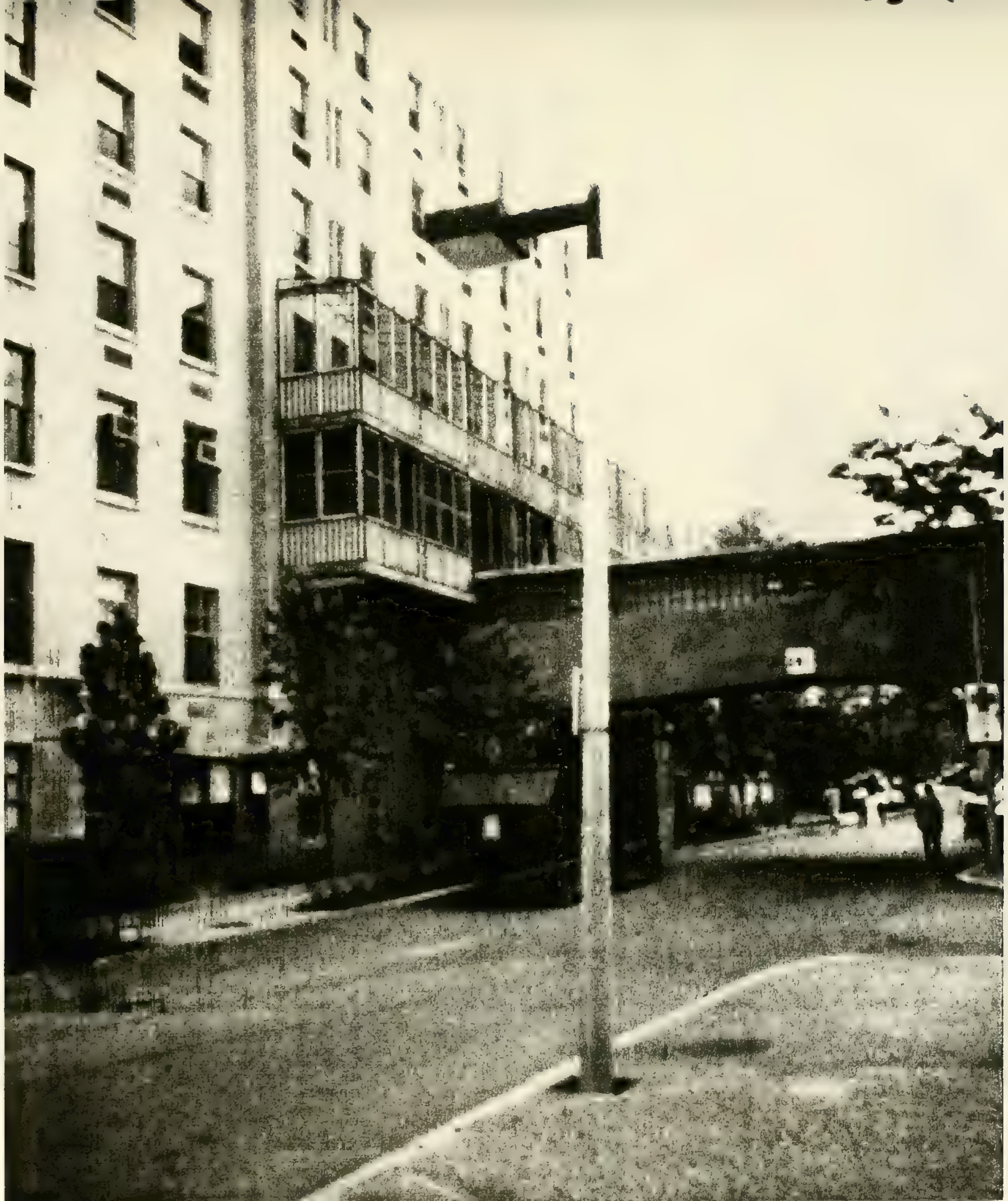
View on
Binney Street
looking East
down
Shattuck Street



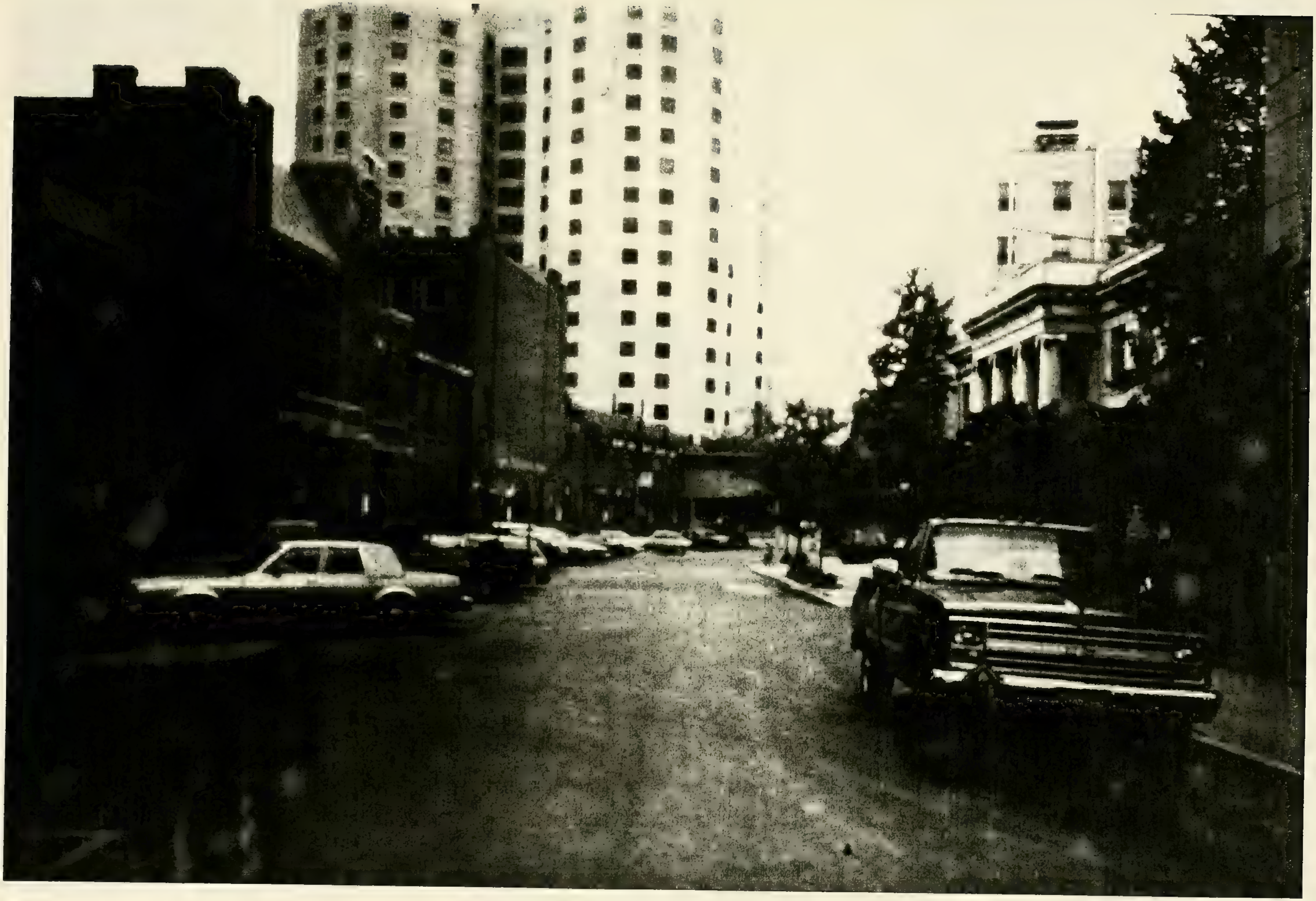
View of Existing Tackaberry Bldg. looking East down Shattuck Street



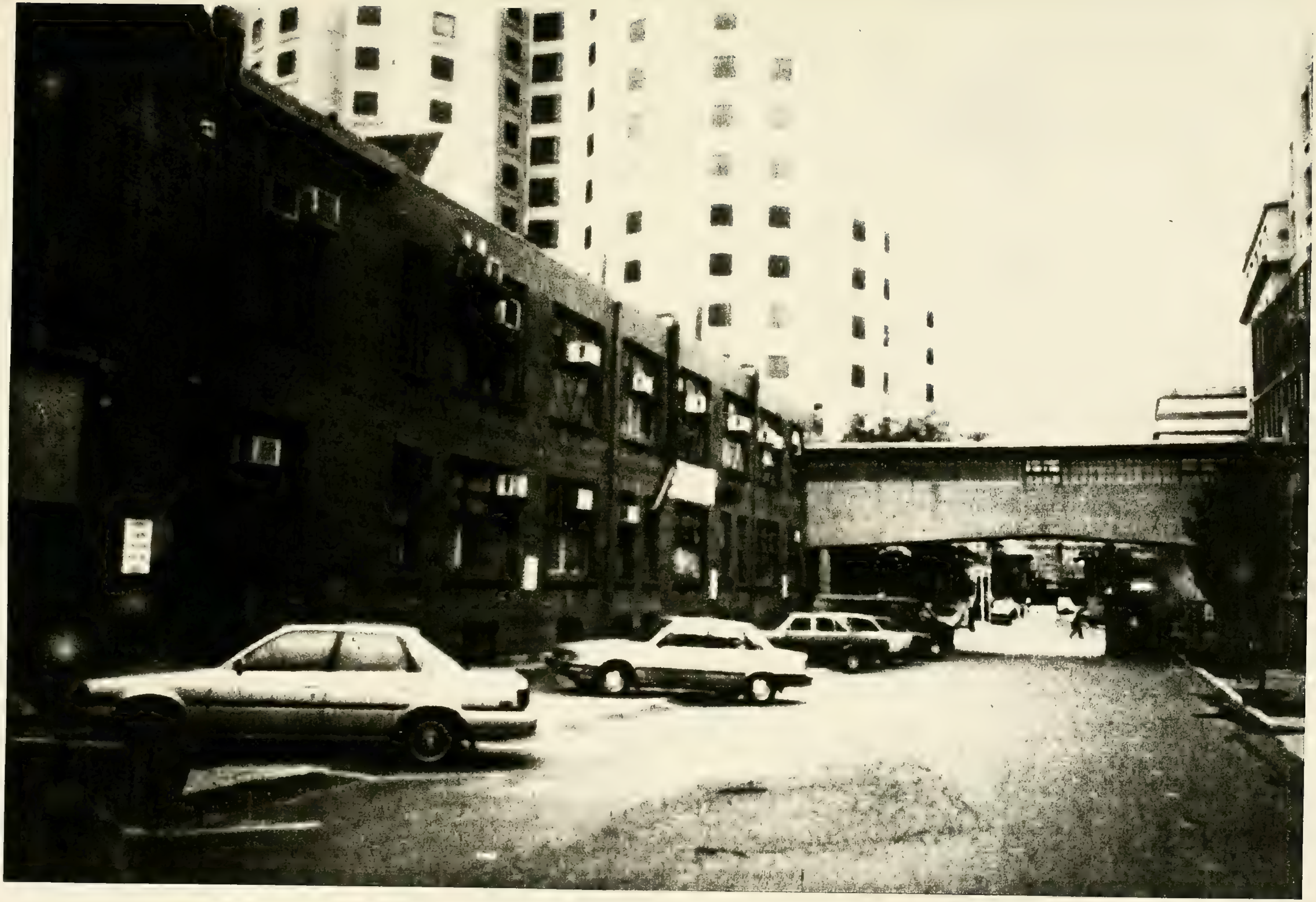
View from Blackfan Street of Existing Ambulance Court and Tower Connector



View of Existing
Pedestrian Bridge
to Children's
Hospital
on Shattuck Street
looking East



View looking West on Shattuck Street from the East Campus



View of Existing Tackaberry Bldg. on Shattuck Street looking West

V. HISTORIC RESOURCES COMPONENT

V. HISTORIC RESOURCES COMPONENT

There is no known historical or archaeological significance for the proposed Clinical Support Facility site. However, the Massachusetts Historical Commission (MHC) and Boston Landmarks Commission (BLC) files list several properties near the proposed project which are deemed to be of some significance. The Environmental Notification Form (ENF) for the Clinical Support Facility filed with MEPA on December 15, 1989 identified all historic structures near the project site. Copies of the ENF were simultaneously submitted to MHC and BLC. No comments were received by the MEPA Unit of the Executive Office of Environmental Affairs during the ENF 30-day comment period from either MHC or BLC for this project. (Please see Figure V-1 for location of historic structures near the project site, and Appendix B for copies of the Boston Landmark Commission Survey Forms accompanying BWH's ENF submission.)

1.0 INTRODUCTION

This section provides summary information on the history of the project site, surrounding cultural resources and the impact of the Clinical Support Facility Project on any historical areas or buildings in the vicinity of the project.

The proposed project is consistent with both other historic buildings located on the north and southsides of Shattuck Street, and with the specific architectural expressions of buildings within the Brigham and Women's Hospital campus. This conclusion is based on two findings. First, that the Clinical Support Facility will be fully visible from only one historic structure - 55 Shattuck Street (see Figure V-2) and generally not visible at all from the cluster of historic buildings within the Harvard Medical School Quadrangle which extends from Shattuck Street to Longwood Avenue about 500 feet from the CSF site (see Figures V-3 and V-4). Any other possible views of the CSF from the southside of Shattuck Street is blocked by the Thorn Building and MRB (see Figure V-5). Second, the CSF project has been developed to strengthen the urban design character of the Brigham and Women's campus. In addition to the building's site along the main pedestrian linkage through the campus (along the "Pike"), the design concept is contextual and integrates with neighboring architectural design. This is illustrated by the curtain wall system of

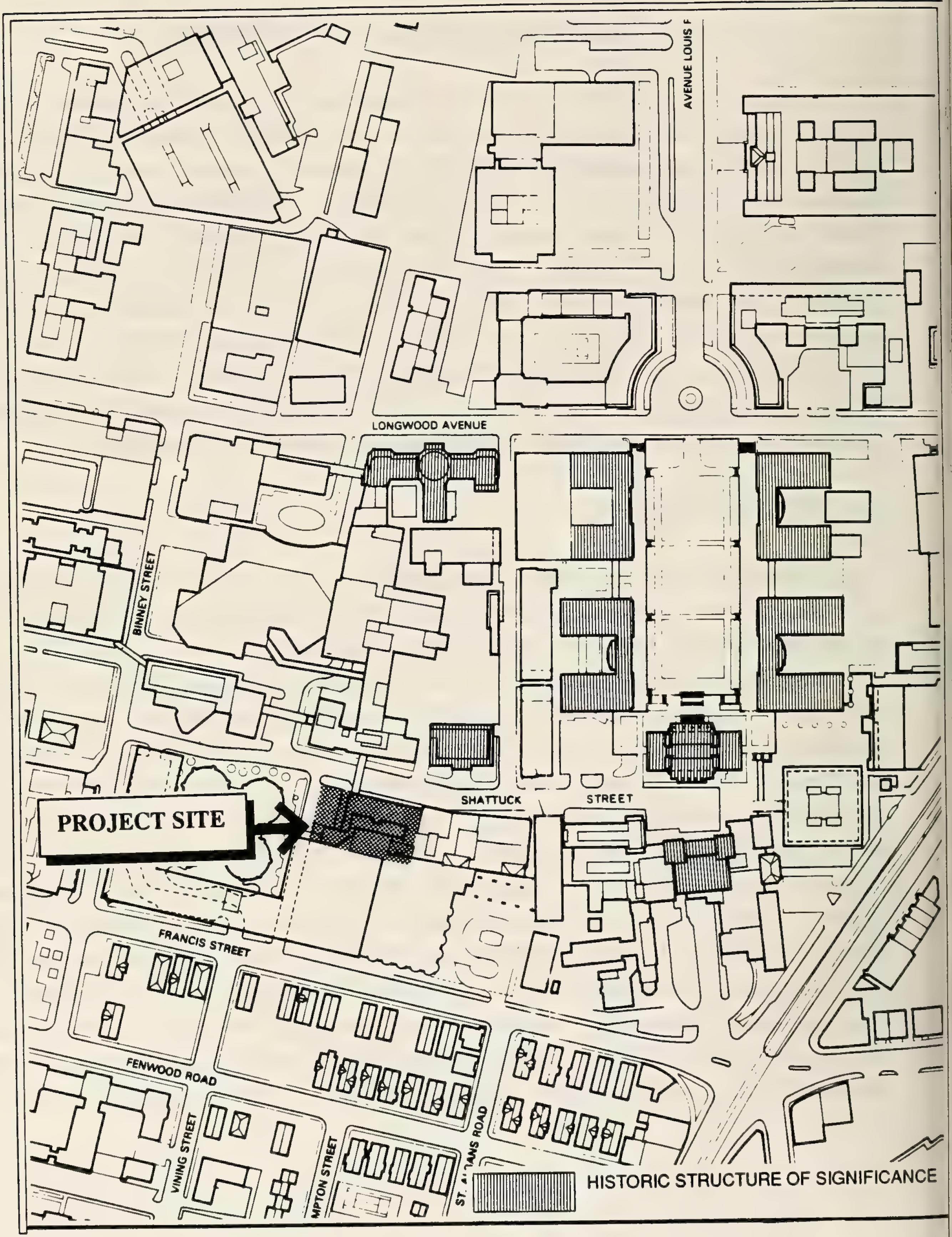


FIGURE V-1
LOCATION OF HISTORIC STRUCTURES NEAR PROJECT SITE

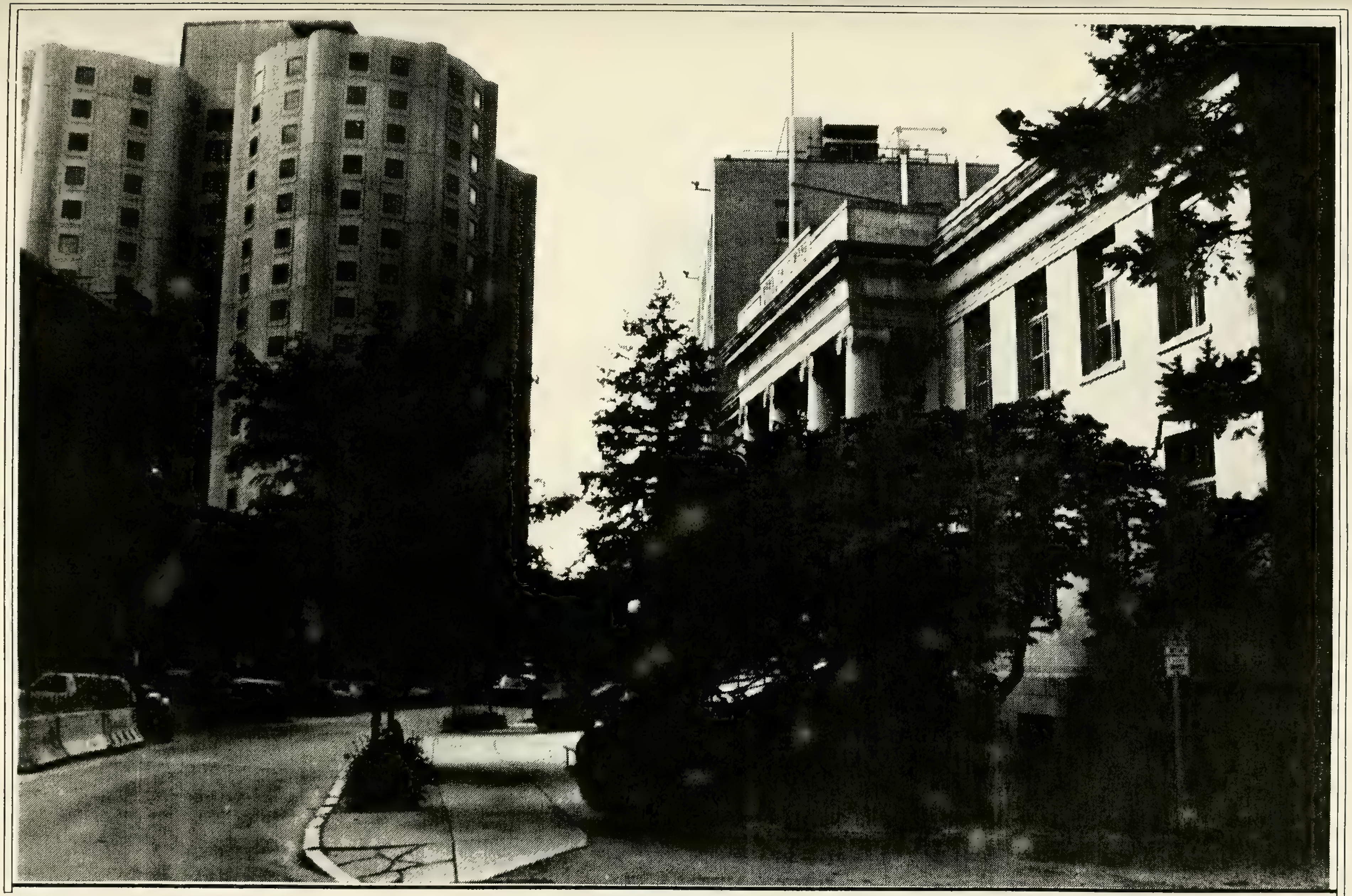


FIGURE V-2
VIEW OF 55 SHATTUCK STREET
AND PROPOSED SITE

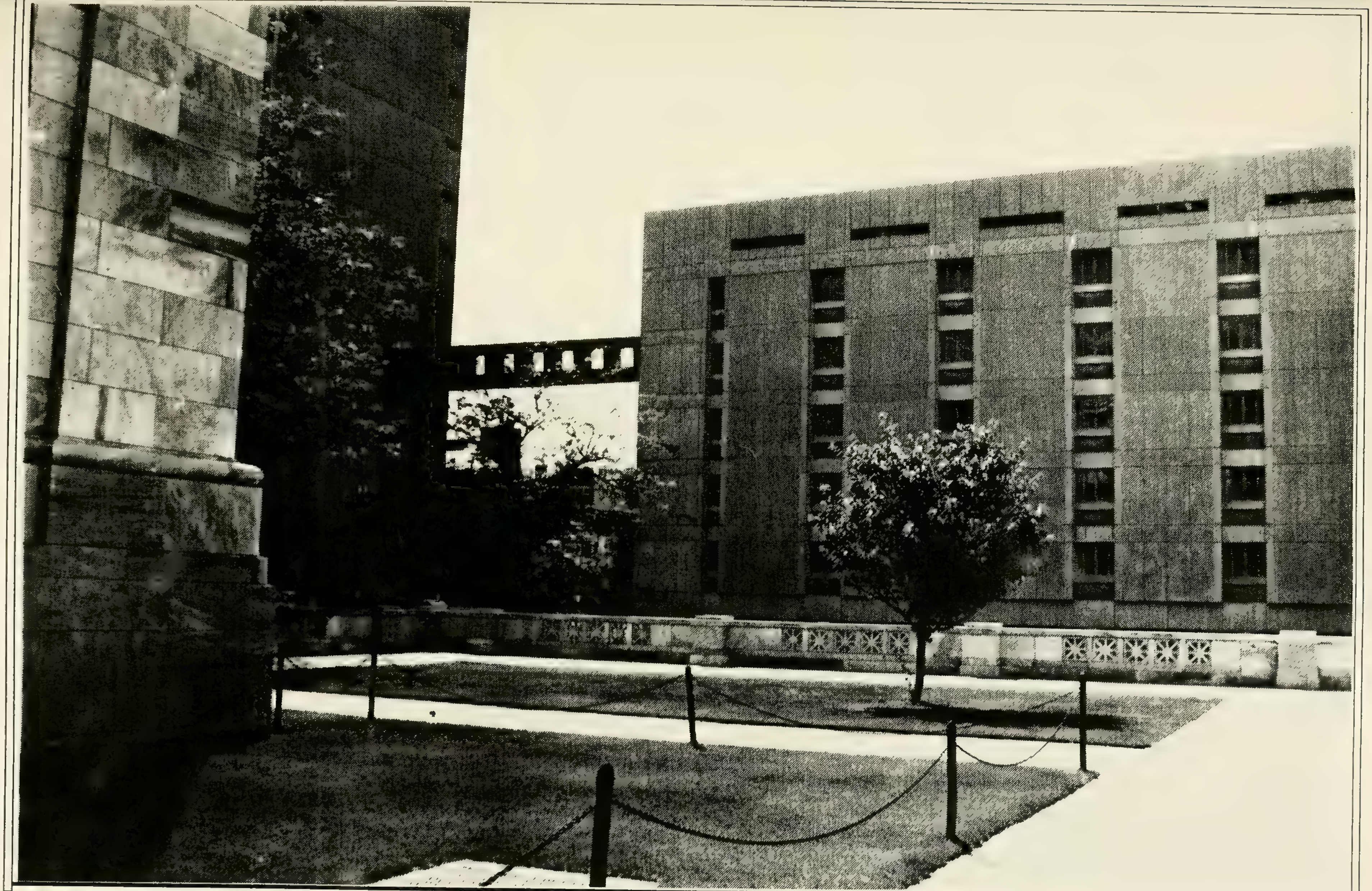


FIGURE V-3
VIEW OF PROPOSED SITE FROM UPPER LEVEL
OF HARVARD MEDICAL SCHOOL QUADRANGLE

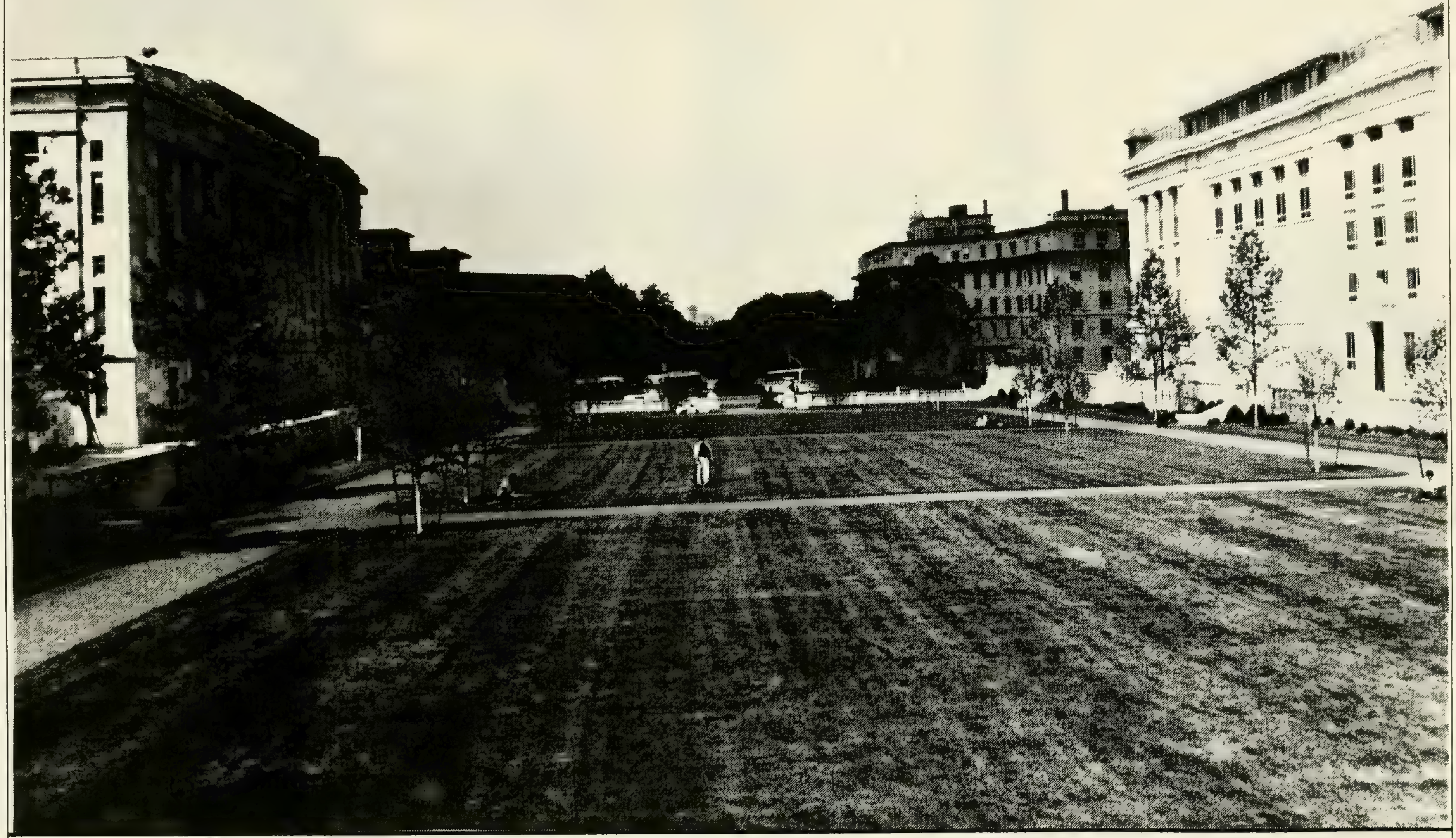


FIGURE V-4
VIEW OF HARVARD MEDICAL SCHOOL QUADRANGLE
BETWEEN SHATTUCK STREET AND LONGWOOD AVENUE

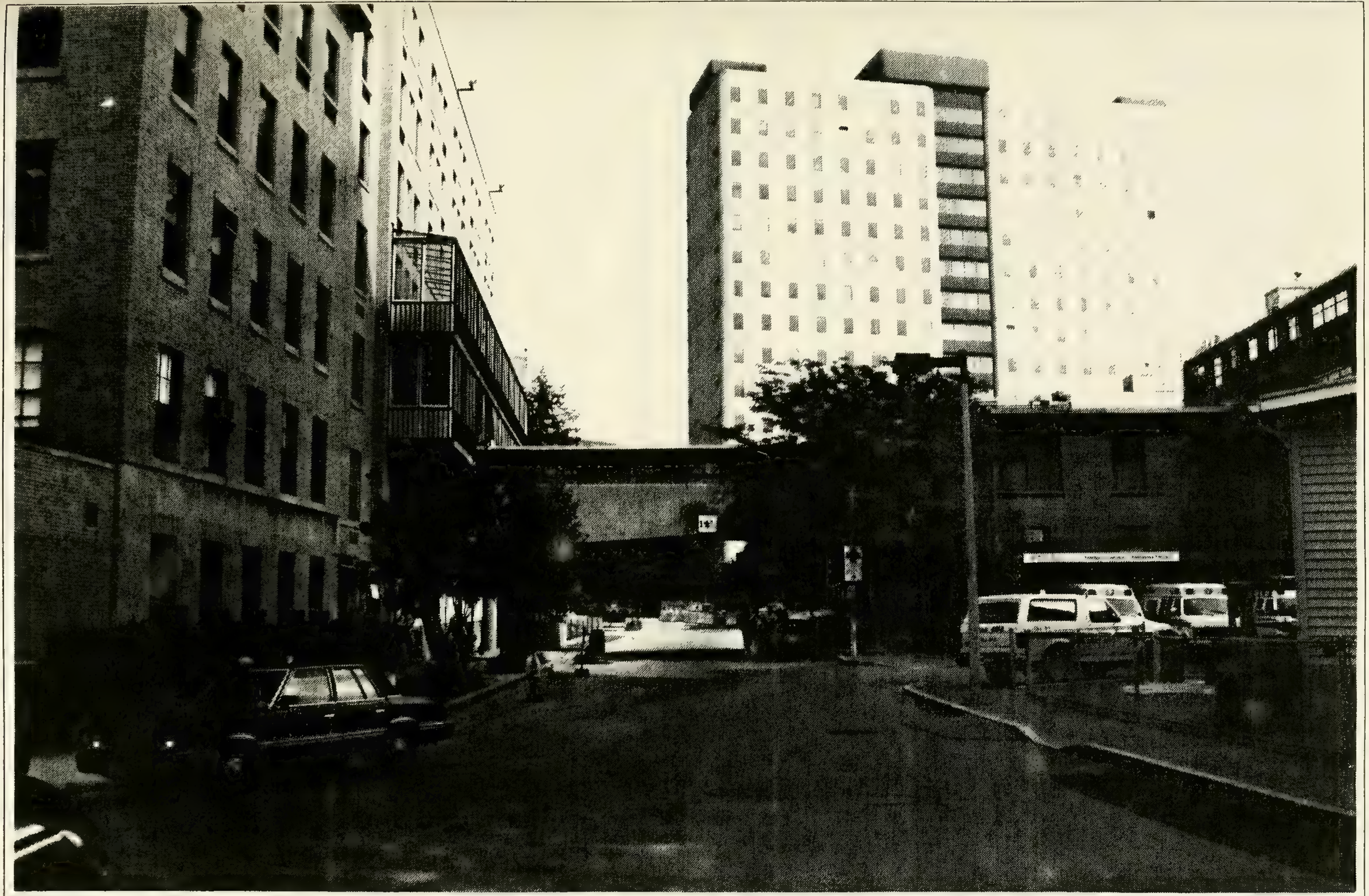


FIGURE V-5
VIEW OF BMW's THORN BUILDING LOOKING EAST FROM THE PROJECT SITE

the CSF's west elevation which subtly references the masonry curve of the Patient Tower's north elevation. The base of the CSF is also most prominently displayed along Shattuck Street, at the north facade. The height of the base aligns itself with the parapet of the existing Amphitheater and Old Surgery building to the east, and the Amory building and tower connector to the west. The base has also been articulated as a two-story element in response to the pedestrian scale of Shattuck Street.

2.0 SITE HISTORY

The Clinical Support Facility will replace the 31,000 square foot Tackaberry Building which is currently located on the site. Massachusetts Historical Commission and Boston Landmarks Commission files do not list the Tackaberry Building as having historical significance.

The site is located on the south side of Shattuck Street, east of the intersection of Shattuck and Blackfan Streets, in the Brigham and Women's Hospital facility in Boston, Massachusetts.

The site is currently bounded by Shattuck Street and the Children's Hospital complex to the north, a plaza and underground basement space of the Brigham and Women's Hospital tower building to the west, Ambulatory I and II buildings to the south, and the older Amphitheater and "in-fill" buildings of the former Peter Bent Brigham Hospital to the east.

The site is currently occupied by a paved ambulance parking lot and three older brick structures which include the 2-story Fanny Tackaberry Memorial Laboratory, a 3-story surgical in-fill building and a 2-story corridor structure referred to as the "Pike." The Tackaberry Laboratory and surgical building are separated by an open paved courtyard.

The Clinical Support Facility is planned to extend 165 feet above grade. The structure will also have two levels below grade with the top of the lowest floor slab at El. 4 or about 33 ft. below adjacent street grade. Bottom of excavation is anticipated at about El. 0.

Information on the history and previous site usage was obtained from a Haley and Aldrich, Inc. Site Evaluation on the Clinical Support Facility* which utilized available information including maps, atlases and historical documents dating back to 1832. Sources of information are contained in Appendix F. Historical ownership and usage of the site and vicinity is summarized in the sections which follow.

Initial development of the site area appears to date back to the latter half of the 1800s. In 1832, the site vicinity was largely undeveloped except for roadways which became known as Francis Street, Brookline Avenue and Huntington Avenue. By 1856, a development known as Oakland Place had been constructed northwest of the subject site at the intersection of Mill Dam Road (Brookline Avenue) and the road later named Francis Street. Binney Street formed the eastern limit of Oakland Place.

By 1919, a substantial number of medical facilities had been constructed in the site vicinity including the Peter Bent Brigham Hospital (built in 1911) extending between Francis Street, Van Dyke Street (Shattuck Street) and Huntington Avenue (see historical plans attached in Appendix F).

The Fanny Tackaberry Memorial Laboratory was present at that time and was identified as a medical and pathological facility. A corridor, connecting the various ward buildings, was present and appeared to compromise the structure currently known as the Pike. A courtyard extended from the south side of the Tackaberry building to the corridor (Pike). The 3-story surgical in-fill building was not constructed until after 1935.

Historical plans from 1919 and 1935 show an approximately 2,500 sq. ft. superintendent's building situated on the south side of Shattuck Street (#76), roughly opposite the intersection with Blackfan Street. Further west were a workshop and laundry building associated with the Peter Bent Brigham Hospital, and the Hospital of the House of the Good Samaritan, fronting Binney Street. These buildings were situated at the current site of the BWH tower.

---

* Report on Oil and Hazardous Materials Site Evaluation Proposed Clinical Support Facility Brigham and Women's Hospital, Boston, Massachusetts, Haley & Aldrich, Inc., April 1991.

3.0 CULTURAL RESOURCES IN THE PROPOSED PROJECT VICINITY

Boston Landmark's Commission files lists several properties near the proposed project as having some historical significance. These were listed in the ENF (see Appendix B) and are summarized below:

- Shattuck Street (Thomas Morgan, Rotch Jr. Memorial Hospital for Infants)
- 230 & 240 Longwood Avenue (Harvard Medical School Complex, 6 buildings)
- 721 Huntington Avenue (old Peter Bent Brigham Hospital)
- 300 Longwood Avenue (original Children's Hospital)

The project proponent has discussed the proposed Clinical Support Facility project with the City's Archaeologist, Mr. Steven R. Pendery. It was not considered by Mr. Pendery that the project would have any archaeological impact as the proposed project would be contained within the footprint of the existing buildings. It would not appreciably extend below the cellar depth of the existing buildings, and would not require extensive new utility construction (see Appendix G for correspondence from Mr. Steven R. Pendery, the City's Archaeologist).

4.0 ANALYSIS OF POTENTIAL EFFECTS

The Clinical Support Facility will generally not be visible from any of the previously identified historic structures near the project site. In fact, it will be fully visible from only one historic structure - 55 Shattuck Street.

The design of the proposed building will better conform with existing buildings within the Brigham and Women's campus than the existing buildings to be demolished. In addition, the replacement second level bridge between the CSF and Children's Hospital will establish a lighter appearance and less of a visual barrier along Shattuck Street than the heavier appearing existing bridge.

The proposed landscaping in the plaza at the base of the Patient Tower will create a softer edge along Shattuck Street and create a more inviting access into the hospital.

Finally, according to the City Archaeologist, as previously stated, the project will not have archaeological impact because the construction will be contained within the footprint of the existing site buildings, will not extend much below the existing basement grade and not lead to extensive new utility construction.

5.0 MITIGATION

The Clinical Support Facility will conform with the overall health care objectives for Brigham and Women's Hospital. Also, the design and height are compatible with other nearby buildings and those within the BWH campus. No additional mitigation is therefore recommended.

VI. INFRASTRUCTURE SYSTEMS COMPONENT

VI. INFRASTRUCTURE SYSTEMS COMPONENT

1.0 INTRODUCTION

The proposed Brigham and Women's development involves the construction of a 234,000 FAR gross square foot Clinical Support Facility (CSF) adjacent to its existing Inpatient Bed Tower. Because the project will impact various local infrastructure systems, this section of the FPIR was prepared to identify and evaluate these impact issues and present mitigation measures. In this section, the impacts of the proposed project on the following systems are addressed:

- Wastewater Disposal
- Water Supply
- Storm Drainage
- Electric Service
- Steam Service
- Chilled Water
- Communications

This section describes the existing systems, the impact of the project on the physical configuration of the systems, and their capacity to serve the proposed development. To determine expected utility use levels for each infrastructure element, estimates have been prepared for increased demands associated with the proposed project and discussed with the respective utility (i.e. BWSC, MATEP, etc.). For each infrastructure element, the impact of the increased demands on the system is described and service connection information is provided. Planned mitigation measures to reduce the impacts of the project are also presented.

The infrastructure impact analysis for the proposed project is primarily based on characteristic utility demand projections. All estimates for existing and new levels of use assume full CSF occupancy.*

---

* The Project Description Narrative describes initial shell space construction of Floors 6 through 9, thereby delaying full occupancy of the Clinical Support Facility.

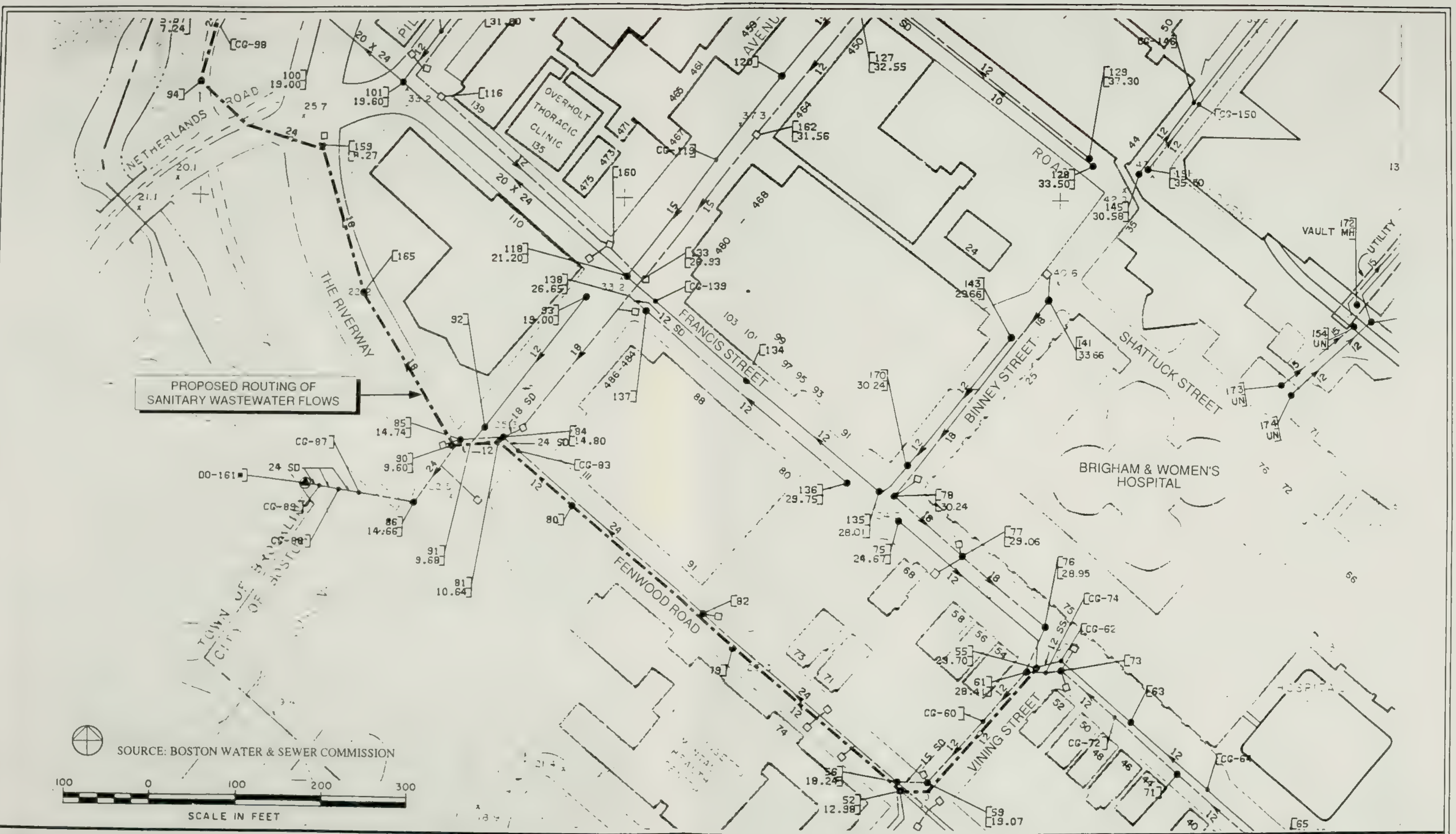


FIGURE IV-1
SANITARY WASTEWATER ROUTING

2.0 SANITARY SEWER AND STORMWATER SYSTEM

2.1 Description of Existing Facilities

The project is served by a sanitary sewer system owned and operated by the Boston Water and Sewer Commission (BWSC). The routing of sanitary wastewater from the project site to a main interceptor sewer is shown in Figure VI-1. A 12-inch storm drain will be connected to the existing 12-inch main located in Shattuck Street.

2.2 Capacity of Existing Facilities

The results of an evaluation of the capacity of the existing sewer routing are shown in Table VI-1. The capacity of each sewer segment has been calculated based on the Manning equation and sewer sizes, manhole invert elevations and segment length data taken from BWSC wastewater system maps. The firms of HMM Associates and Robert W. Sullivan have been in contact with MWRA and BWH with regard to this project and the following connection options have been discussed.

- Francis Street Option

  The capacity of this route has been determined as shown in Table VI-1. Sewage flows which enter the Francis Street sewer eventually is routed into a Town of Brookline sewer. Representatives from both the BWSC and Town of Brookline Department of Public Works have indicated that the additional flows generated by the project will not be a problem for available capacity in the affected sewer lines (see Appendix H).

- Boston Main Interceptor to Deer Island

  The Boston Main Drainage Tunnel (capacity of 438 mgd) discharges to the Main Pumping Station at Deer Island with a design capacity of 810 mgd, while the Treatment Plant design capacity is 848 mgd. During peak flows in excess of the Deer Island Plant capacity, the Columbus Park Headworks is sometimes throttled and excess flow diverted to the Calf Pasture Pump Station on Columbia Point which discharges to the Moon Island holding tanks and outlet.

TABLE VI-1
BRIGHAM AND WOMEN'S HOSPITAL SEWER CAPACITY EVALUATION*

Segment MH - MH	Street Name	Segment Size (inches)	Segment Length (ft)	Slope (ft/ft)	Capacity (MGD)
55-52	Vining	12	210	0.051	4.52
52-81	Fenwood	12	620	0.004	1.23
81-90	Brookline	12	55	0.019	2.75
90-159	Riverway	18	390	0.003	3.45
159-95	Riverway	24	330	0.007	10.61
95-CZ96	Muddy River	15	35	0.004	2.29
CZ96-CZ97	Muddy River	16	50	0.004	2.66
CZ97-166	Muddy River	18	55	0.006	4.64
166-167	Muddy River	18	80	0.011	6.26
	Total Length		1,825		

---

* Manhole identification nos., sewer sizes, invert elevations and segment lengths from BWSC wastewater system maps no. 20G. Capacity calculated using Mannings' Equation with a coefficient of roughness of 0.015 (fair condition brick or concrete).

2.3 Project Wastewater Generation

The majority of wastewater generated by the new development is domestic sewage. The sewage generation rates have been estimated by use category based on Title V guidelines. The total project domestic sewage discharge is projected to be 27,933 gpd.

2.4 System Connections

New sanitary sewage service connections will be made during the construction of the new facility. Several locations are under consideration and it appears that the most likely location will be at Francis and Vining Streets. Preliminary discussions with the BWSC have indicated that these locations will be acceptable. The construction of these connections will be incorporated into the general construction phasing in order to minimize impacts on adjacent streets and to ensure that adequate facilities are available to service the site during construction.

2.5 Permitting Requirements/Mitigation

For new construction projects requiring connection to the sewers, an application for a sewer connection permit will be required in accordance with 324 CMR 7.00. The sewer connection application together with a water and sewer site plan will be submitted to the BWSC, which will approve and forward the application to the Department of Environmental Protection (DEP) - Division of Water Pollution Control (DWPC). The permit application must be submitted at least ninety days prior to construction of this work.

Consultants for the MWRA are presently in the process of evaluating the combined sewer overflows to the Boston Harbor and Fort Point Channel. This study is scheduled to be released in draft form in January 1992 and in final form in July of 1992. This report will delineate methods of controlling and/or treating overflows. The project constructed systems will be developed in such a manner as to be compatible with report findings.

In order to mitigate the impacts of the new sewage generation, the Brigham and Women's Hospital project will meet all applicable code requirements for the installation of low flow fixtures. The use of low flow fixtures can reduce the projected water consumption and sewage generation rates estimated by up to 20 percent. Any impacts will be further mitigated by the initial shell space construction of Floors 6 through 9, thereby delaying full occupancy of the Clinical Support Facility.

The design and construction of all proposed service connections and system modifications will be performed to the standards of the BWSC and will be subject to their review and approval. Existing sewer connections and service to the area will be maintained during construction of the new facilities. If interruptions are necessary due to construction activities, they will be coordinated with the BWSC so as to minimize impacts in the service area.

2.6 Project Storm Drainage

The site is currently fully built up or paved with existing buildings or parking areas. There will be no increase in imprevious area. Thus, the proposed project will not result in changes to stormwater runoff volumes, although discharge points to the adjacent collection system may be altered. Based on discussions with the BWSC, there are no known stormwater problems within the project area. The proposed routing, as previously stated, will be through a 12-inch storm drain which will be connected to the existing 12-inch main located in Shattuck Street.

3.0 WATER DISTRIBUTION SYSTEM

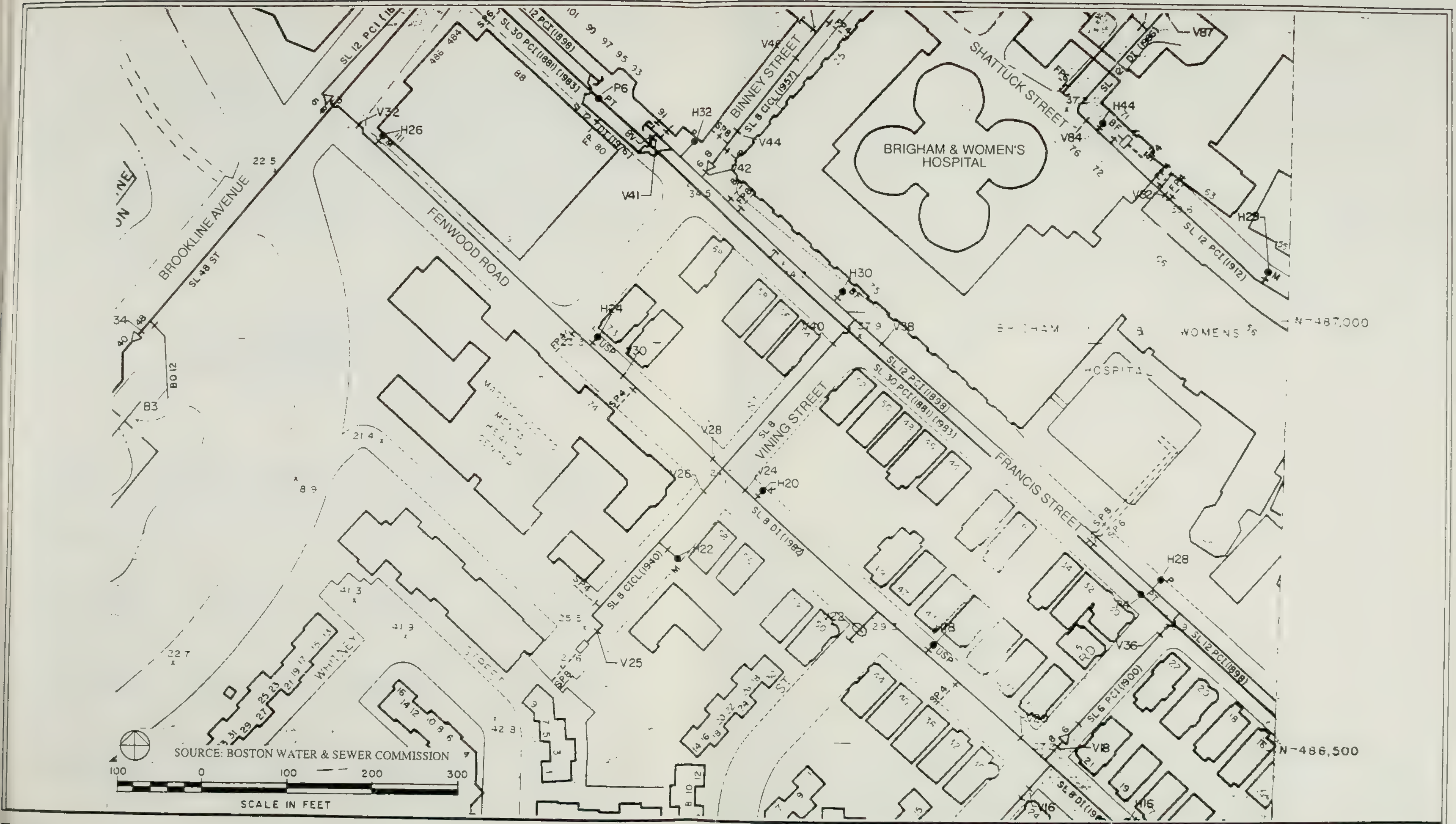
This section presents an analysis of the proposed Brigham and Women's Hospital project's anticipated impacts on existing water supply facilities. The analysis includes a description of existing facilities, an estimate of the project water consumption, and an evaluation of the facilities' adequacy to handle the increased demand. A number of mitigation measures, such as the use of water conserving plumbing fixtures are proposed to reduce the project impact. The firms of Robert W. Sullivan and HMM Associates have been in contact with MWRA and BWSC and the following analyses has resulted from this discussion.

3.1 Description of Existing Facilities

Existing water service for both domestic use and fire protection to the project site is supplied from water systems owned and operated by the Boston Water and Sewer Commission. These systems are designated as the Southern Low Service (SLS) system, which is generally used to meet domestic water needs and some street hydrant demand.

This water supply system is integrally connected to form loops which allow major water demands to be fed from more than one direction. This looping allows each system to function at optimum efficiency, and to provide a measure of safety and redundancy in the event of a water main break.

The BWSC water distribution system in the project area is shown in Figure VI-2.



SOURCE: BOSTON WATER & SEWER COMMISSION

FIGURE VI-2
BWSC WATER DISTRIBUTION SYSTEM IN THE
VICINITY OF THE PROJECT SITE

3.2 Capacity of Existing Facilities

The existing SLS system in the site vicinity has been tested for capacity via hydrant flow tests as summarized in Table VI-2. SLS lines directly adjacent to the site were not tested due to the types of hydrants and the age and condition of the mains. Flow and pressure in the tested hydrants appear to be adequate to serve the development's water use needs and firefighting requirements. BWSC personnel are modeling the area's water system on their computer system to determine the project's impact, establish the optimal service scenario for the proposed project and to confirm the adequacy of proposed system improvements.

TABLE VI-2
HYDRANT FLOW TESTS
BRIGHAM AND WOMEN'S HOSPITAL

Hydrant Test Location	Test Date	Static Pressure	Measured Flow at Residual Pressure	Calculated Flow at 20 psi Residual Pressure
Vining/Fenwood 8" HS	1/90	58 psi	2408 gpm @ 46 psi	4,487 gpm
Fenwood/Brookline 8" LS	1/90	55 psi	2285 gpm @ 41 psi	3,748 gpm
Francis/Brookline 12" LS	11/87	57 psi	2889 gpm @ 49 psi	6,605 gpm
Pilgrim/Longwood 12" LS	9/87	52 psi	2837 gpm @ 33 psi	3,759 gpm

3.3 Project Water Use

For the proposed Brigham and Women's Hospital development, water use will consist primarily of domestic water consumption. Average daily water consumption was estimated using the Title V guidelines. Peak use values have been estimated by applying a peaking factor of 3. Average daily domestic water is estimated to be 30,726 gpd with an instantaneous peak of 64 gpm.

3.4 System Impacts

Based on recent hydrant flow test data (Table VI-2), the existing SLS water system serving the project has a capacity of approximately 2,285 gpm at 41 psi, which is more than adequate to supply the 64 gpm peak demand of the Brigham and Women's Hospital development. The project also requires a fire flow of approximately 2,000 gpm. The existing SHS water system is capable of supplying approximately 3,750 gpm at 20 psi which is more than adequate to meet the firefighting requirements of the project.

3.5 System Connections

Domestic Water and Fire Protection Service will be extended from the existing 12-inch municipal water main in Shattuck Street.

3.6 Water System/Mitigation Measures

In order to minimize water use, the Brigham and Women's Hospital project will meet all applicable code requirements for the installation of low flow fixtures. In addition, the Hospital plans to use the water resources as effectively as possible and are evaluating various operational approaches to achieve this goal. Additional measures to conserve water will include the use of plantings and fountains that require low water use.

4.0 ENERGY SYSTEMS

4.1 Energy Use Strategies

The Brigham and Women's Hospital project site is currently serviced by the Medical Area Total Energy Plant (MATEP), being operated by Cogeneration Management Company, Inc. Connections for electricity and steam will be made into existing facilities located in the mechanical room of the Hospital's adjacent Inpatient Tower.

For the proposed project, the base condition anticipates that steam and electricity will be the main source of space heating, air conditioning, lighting, mechanical equipment and hot water. Natural gas will not be used to supply any facility needs. MATEP will continue to meet the Brigham and Women's Hospital needs. A letter from MATEP officials stating that sufficient capacity is available to meet the project needs for steam, chilled water, and electricity is included in Appendix I.

4.2 Electric Service

Existing electric service to the project area will be maintained at all times during construction. New service to the proposed facility will be provided by the construction of electric vaults to transform power to meet the new load requirements. Details of proposed modifications and implementation schedules will be coordinated throughout design and construction with MATEP. The estimated load for electricity is 3,800 KVA.

Efforts to conserve energy will lead to reduced site needs. Compliance with the new State Building Code requirements for such items as lighting and insulation, are expected to minimize electrical energy consumption.

4.3 Steam Service

Steam service for the Brigham and Women's Hospital project site will be provided by MATEP from their steam generating plant located on Francis Street (as discussed in the letter from MATEP). This station has a generating capacity of 900,000 lbs/hr. and operates on a continuous basis, 365 days per year. The estimated load for steam is 23,000 lbs/hr. There will be no discharge of steam condensate. All steam condensate will be returned to MATEP.

4.4 Chilled Water

Connections for chilled water will be made into the existing MATEP distribution system network located in Shattuck Street. The estimated load for chilled water is approximately 1,100 tons of refrigeration.

5.0 COMMUNICATIONS

The existing New England Telephone Company (NET) conduits enter the Hospital campus from Francis Street. It is believed that there is sufficient capacity in these conduits to handle the growth caused by the construction of the Clinical Support Facility. The Hospital will be adding additional trunk capacity to support this new facility. This growth in trunk capacity can be accommodated through the existing NET facilities. This will not be a significant increase since the Hospital has it's own Private Branch Exchange (PBX) switch and is not dependent on New England Telephone for these services. Another factor is that as the Hospital changes from copper wiring to fiber optics with T1/T3 technology the diameters of the incoming cabling will decrease as capacities increase allowing for future growth.

VII. TRANSPORTATION ACCESS PLAN (SUMMARY)

VII. TRANSPORTATION ACCESS PLAN (SUMMARY)

1.0 STUDY METHODOLOGY

The transportation access plan was conducted in three distinct phases in response to BTD's Scope (Appendix A). Phase I involved an inventory of existing conditions and travel demand characteristics in the area. The inventory included researching previous transportation reports including the LMA Transportation Study,* as well as conducting new observations of area travel demands. New observations of traffic volumes and conditions were conducted in September and October 1990, during the morning and evening peak periods at the two analysis locations in the study area. Data collected during the inventory phase were assembled and used to define the existing transportation network as a base condition for subsequent analyses.

Phase II of the study built upon the database assembled in Phase I and established the framework for evaluating the transportation impacts of the proposed project. In this phase, specific travel demand forecasts for the project were assessed along with future demands projected to be created by other area developments. The year 1993, the target date for project occupancy, was selected as the analysis year.

Phase III, the final study phase, included evaluation of the impacts of the project on the transportation system, identification of measures to mitigate impacts, and development of a monitoring program. (See Appendix E for the completed Transportation Access Plan for the Clinical Support Facility.)

2.0 SUMMARY OF FINDINGS

The project is expected to generate approximately 788 net new daily vehicle trips, of which approximately 57 are expected in the morning peak hour, while about 65 are expected in the evening peak hour. Two intersections near the project site were analyzed for traffic impacts. The analysis concluded that project traffic is expected to have no significant effect on traffic conditions. Traffic under No-Build and Build conditions in

---

* Longwood Medical Area Transportation Study; Vanasse Hangen Brustlin, Inc. Technical Memorandum #1 (November 1987), Technical Memorandum #2 (April 1988), and Technical Memorandum #3 (May 1988).

1993 is expected to operate under deficient levels of service largely due to the impacts from background traffic in the Longwood Medical Area. The traffic conditions at the two intersections studied can be partly improved by relatively inexpensive measures like adjusting signal timing and phasing, coordinating the signals with adjacent intersections, and striping approach lanes.

The 788 net new daily vehicle-trips are expected to create a net new peak parking demand for 105 spaces, which include 75 employee and physician spaces, 24 patient and visitor spaces, and 6 hotel-related spaces. The new staff parking is expected to be accommodated in parking facilities at 375 Longwood Avenue and 49 Lansdowne Street. The patient and visitor parking is expected to be accommodated at the Hospital's ASB II Garage and Service Center Garage.

The project site is located within one-quarter mile of four public transportation routes: the "E" branch of the MBTA Green Line and MBTA Bus Routes 39, 49, and 47A. The project is expected to generate approximately 176 net new transit trips daily, including about 40 in the morning peak hour and about 47 in the evening peak hour. When distributed among the various transit routes serving the site, these new transit trips are expected to have no significant effect on public transportation conditions.

APPENDICES

B W H

APPENDIX A

Boston Redevelopment Authority, Scoping Determination for Brigham and Women's Hospital Clinical Support Facility (October 15, 1990), and Preliminary Adequacy Determination with Technical Appendix for Brigham & Women's Hospital Clinical Support Facility (June 20, 1991)

STON
DEVELOPMENT
HORITY

ond L. Flynn

en Coyle

Hall Square
MA 02201
2-4300

October 15, 1990

Mr. Nicholas J. Johnson
Vice President
Administrative Services
Brigham & Women's Hospital
75 Francis Street
Boston, MA 02115

Re: Brigham & Women's Hospital Clinical Support Facility

Dear Mr. Johnson:

Enclosed is the Scoping Determination for the Brigham & Women's Clinical Support Facility (the "Proposed Project"), for which you submitted a Project Notification Form ("PNF") pursuant to Article 31 of the Boston Zoning Code. This Scoping Determination requests information required by the Boston Redevelopment Authority in response to the PNF submitted April 30, 1990.

Additional information may be required during the course of review of the Proposed Project. If you have any questions regarding the Scoping Determination or the review process in connection with the Proposed Project, please contact Gerard Kavanaugh, Director of Institutional Planning, at 722-4300, extension 4286.

Sincerely,

Homer Russell

Homer Russell
Assistant Director,
Urban Design and Development

Enclosure

BOSTON REDEVELOPMENT AUTHORITY

SCOPING DETERMINATION

BRIGHAM & WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

SUBMISSION REQUIREMENTS FOR DRAFT PROJECT IMPACT REPORT

PROPOSED PROJECT:	Brigham & Women's Hospital Clinical Support Facility
PROJECT LOCATION:	75 Francis Street
APPLICANT:	Brigham & Women's Hospital

The Boston Redevelopment Authority ("BRA") is issuing this Scoping Determination pursuant to Section 31-5 of the Boston Zoning Code (the "Code"). The applicant filed a Project Notification Form ("PNF") on April 30, 1990. The Scoping Determination requests information required by the BRA for its review of the Proposed Project in connection with the following:

(a) Development Review pursuant to Article 31 of the Code;

(b) Recommendations to the Board of Appeal with respect to the zoning relief for the Proposed Project, pursuant to Articles 6A and 7 of the Code, and to the Boston Zoning Commission with respect to an Amendment to the Development Plan for Planned Development Area ("PDA") No.10; and

(c) Approval of a Development Impact Project ("DIP") Plan, pursuant to Article 26A of the Code, and the entering of agreements for the Development Impact Project Contribution and Jobs Contribution Grant, pursuant to Articles 26A and 26B of the Code.

PREAMBLE

The BRA is reviewing the Proposed Project pursuant to multiple sections of the Code. With the consent of Brigham & Women's Hospital, the Proposed Project is being reviewed pursuant to Article 31, Development Review Requirements, which sets out a comprehensive procedure for project review and requires the BRA to review the design, transportation, environmental, and other impacts of proposed projects. Article 31 requires the submission of a satisfactory Final Project Impact Report prior to the issuance of a building permit.

In addition, the Proposed Project requires exceptions pursuant to Article 6A of the Code, Development Impact Project Plan approval, pursuant to Articles 26A and 26B of the Code, and approval by the Boston Redevelopment Authority and the Boston Zoning Commission of an Amendment to the PDA Plan. In order to be granted each type of zoning relief, a different set of criteria must be satisfied.

The Proposed Project requires exceptions under Article 6A for the following deviations from the Code:

- Side Yard, Front Yard, and Rear Yard
- Parapet Setback
- Floor Area Ratio
- Off-Street Loading
- Hotel Use
- Off-Street Parking for Hotel Use

Conditions for approval of exceptions are outlined in Section 6A-3 of the Code.

The Proposed Project will also require a variance for the replacement of an existing bridge crossing Shattuck Street to Children's Hospital. The portion of Shattuck Street owned by Brigham & Women's Hospital at that location is not within the PDA.

Conditions for approval of variances are outlined in Section 7 of the Code.

The Proposed Project also requires DIP Plan approval pursuant to Articles 26A, Development Impact Projects - Housing, and 26B, Development Impact Projects - Job Training. Prior to receiving the zoning relief listed above, the Applicant must meet the DIP requirements, pursuant to Sections 26A-3 and 26B-3 of the Code. These requirements include that the BRA approve the DIP Plan after a public hearing, and that the Applicant enter into a DIP Agreement with the BRA.

I. BRIGHAM & WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY PROJECT DESCRIPTION

The Proposed Project is located on the campus of Brigham & Women's Hospital in Boston, Massachusetts. The Proposed Project is located in an area which is zoned H-3-D by the Code.

Brigham & Women's Hospital proposes to (1) demolish 60,200 SF(FAR) of existing space, (2) construct a new 202,700 GSF (nine stories above grade) facility, which will include neonatal intensive care, obstetrical and gynecological clinical space, one floor of hotel space for families and for inpatient pre- and post-procedural care, three floors of faculty office space, and support space, (3) construct an enclosed pedestrian link from Shattuck Street to the existing Ambulatory Services Building Lobby, and (4) replace a pre-existing bridge spanning Shattuck Street connecting the Proposed Project to the Children's Hospital.

The existing Main Campus of Brigham & Women's Hospital is approximately 8.3 acres (362,726 SF), and the existing Boston Lying-In (BLI) Campus is approximately 1.6 acres (69,899 SF). The combined area of the two campuses is 432,625 SF. The gross floor area of the main campus is 1,170,840 SF, and that of the BLI campus is 163,442 SF, yielding a grand total of existing floor area of 1,334,282 SF. The existing FAR of the Main Campus is 3.2, the existing FAR of the BLI Campus is 2.3, and the combined FAR of the two campuses is 3.1. The addition of 122,700 net new FAR square feet will create a Main Campus gross floor area of 1,293,540 SF and a Main Campus floor area ratio of 3.6, a combined campus floor area of 1,456,982 SF and a combined campus FAR of 3.4.

II. BRIGHAM & WOMEN'S HOSPITAL MASTER PLAN

In October, 1989, Brigham & Women's Hospital submitted to the BRA a revised Draft Master Plan for the Hospital. Brigham & Women's Hospital has submitted copies of the Master Plan to the Chairman of the Mission Hill Planning and Zoning Advisory Committee ("PZAC"). The community review of the Master Plan and the proposed Clinical Support Facility will occur simultaneously, since the Proposed Project is the first significant project since the submission of the Master Plan. Components of the Proposed Project include:

(a) Construction of the Clinical Support Facility (202,700 GSF (182,900 FAR SF) new);

(b) Construction of a bridge spanning Shattuck Street connecting the Proposed Project to Children's Hospital;

(c) Construction of a bridge at the fourth floor connecting the Proposed Project to the existing Brigham and Women's Tower Building;

(d) Construction of an enclosed pedestrian link from Shattuck Street to the existing Ambulatory Services Building Lobby, providing a passage between Shattuck Street and Francis Street;

(e) Demolition of existing buildings on the site, including the Tackaberry Building, to allow construction of the Clinical Support Facility; and

(f) Demolition of the existing bridge spanning Shattuck Street connecting the Tackaberry Building to Children's Hospital.

Other projects which the Master Plan identifies include:

(a) Construction of the Longwood Medical Research Center (LMRC), a 99,659 SF, six story, research laboratory facility, to be built on the BLI campus. A 58,400 SF wing of the old BLI Hospital has been demolished to make room for the new facility. Construction of the building began in June, 1989 and is scheduled for completion in June, 1991.

(b) Construction of the Academic and Research Facility (formerly known as Academic I), a 178,000 SF(FAR), 12 story facility to be constructed adjacent to the existing Thorn Biosciences Research Building. 66,000 SF(FAR) would be devoted to research laboratory space, and the remaining space would be occupied by administrative and faculty offices relocated from other buildings. Total demolition would be 91,200 SF(FAR) for net new construction of 87,300 SF(FAR). Construction would not begin until 1995 or later, and is contingent upon the Hospital's ability to raise necessary funds.

(c) The renovation of the 28,280 SF Medical Research Building. As research programs which currently occupy the building are relocated to new planned research facilities, the Medical Research Building will be used to accommodate expanded ambulatory care programs or faculty offices.

(d) The construction of a new Tower Lobby, to be completed in two phases, resulting in a net addition of 9,200 SF(FAR). Phase I (5,500 SF) was completed in 1988. Phase II (3,700 SF) will be completed between 1990 and 1995.

(e) The improvement and enlargement of Brigham Green, the entry area to the old Peter Bent Brigham Hospital, and the restoration of the Peter Bent Brigham lobby. The Brigham Green project is scheduled to occur concurrent with the Proposed Project, and the lobby restoration was completed in September, 1989.

III. COMMUNITY REVIEW OF THE PROPOSED PROJECT

BRA staff and the Mayor's Office of Neighborhood Services will work with Brigham & Women's Hospital and the Mission Hill PZAC to facilitate the community review of the Proposed Project and the

Hospital's Master Plan. The Hospital has presented copies of the Master Plan to the PZAC Chairman, and meetings to discuss the proposal took place on June 20, July 18, and September 19, 1990. It is expected that the PZAC review process will be completed in the Fall of 1990.

IV. DEVELOPMENT REVIEW REQUIREMENTS - ARTICLE 31

SUBMISSION REQUIREMENTS

In addition to full-size scale drawings, 15 copies of a bound booklet containing all submission materials reduced to size 8-1/2" x 11", except where otherwise specified. In addition, an adequate number of copies must be available for community review.

A. GENERAL INFORMATION

1. Applicant Information
    - a. Development Team
        - (1) Names
            - (a) Developer (including description of development entity and type of corporation)
            - (b) Attorney
            - (c) Project consultants
        - (2) Business address and telephone number for each
        - (3) Designated contact for each
    - b. Legal Information
        - (1) Legal judgments or actions pending concerning the Proposed Project
        - (2) Evidence of site control over the project area, including current ownership and purchase options of all parcels in the proposed project, all restrictive covenants and contractual restrictions affecting the proponent's right or ability to accomplish the Proposed Project and the nature of the agreements for securing parcels not owned by the prospective developer.

(3) Nature and extent of any and all public easements into, through, or surrounding the site.

2. Financial Information (See Appendix 1 for required financial information)

Development and Operating Pro Formas must be provided for the proposed project.

a. Full disclosure of financing references

b. Development Pro Forma

c. Ten (10) Year Operating Pro Forma

3. Project Area

a. Description of metes and bounds of project area or certified survey of project area

4. Public Benefits

a. Development Impact Project Contribution and Jobs Contribution Grant specifying amount of housing linkage and jobs linkage contributions and method of housing linkage contribution (housing payment or housing creation)

b. Adjustment in tax revenues, specifying existing and estimated future Payment In Lieu of Taxes (PILOT)

c. Anticipated employment levels including the following:

(1) Estimated number of construction jobs

(2) Estimated number of permanent jobs

d. Other public benefits, if any, to be provided.

5. Regulatory Controls and Permits

a. Existing zoning requirements, zoning computation forms, and any anticipated requests for zoning relief should be explained.

b. Anticipated permits required from other local, state, and federal entities with a proposed application schedule should be noted.

c. If the Proposed Project becomes subject to the Massachusetts Environmental Policy Act (MEPA), required documentation should be provided, including copies of the Environmental Notification Form and a proposed schedule for coordination with BRA procedure.

6. Community Groups

a. Names and addresses of project area owners, displacees, abutters, and also any community groups which, in the opinion of the applicant, may be substantially interested in or affected by the proposed project

b. A list of meetings proposed and held with interested parties

B. TRANSPORTATION COMPONENT

A Transportation Access Plan shall be prepared as defined by the Scope of Services outlined in Appendix 2.

C. ENVIRONMENTAL PROTECTION COMPONENT

1. Wind

A qualitative analysis of the potential wind impacts of the Proposed Project at the pedestrian level shall be required for the Draft Project Impact Report. This analysis should determine potential pedestrian level winds adjacent to and in the vicinity of the project site and shall identify any areas where wind velocities are expected to exceed acceptable levels.

Particular attention must be given to public and other areas of pedestrian use, including, but not limited to, building entrances and sidewalks and other public areas adjacent to the building. For areas where wind speeds are projected to exceed acceptable levels, measures to reduce wind speeds and to mitigate potential adverse impact must be identified.

Should the qualitative analysis indicate the possibility of excessive pedestrian level wind speeds, additional studies, including wind tunnel testing, may be required for the Final Project Impact Report.

2. Shadow

A shadow analysis is required for existing build conditions for the hours 9:00 a.m., 12:00 noon, and 3:00 p.m. for the vernal equinox, summer solstice, autumnal equinox, and winter solstice. Note that due to time differences (daylight savings vs. standard), the autumnal equinox shadows would not be the same as the vernal equinox shadows and therefore separate shadow studies are required for the vernal and autumnal equinoxes.

The shadow impact analysis must include net new shadow as well as existing shadow and must clearly show the incremental impact of the Proposed Project.

Particular attention must be given to existing or proposed public open spaces and major pedestrian areas, including, but not limited to, the sidewalks adjacent to the building.

Design or other mitigation measures to limit or minimize any adverse shadow impact shall be identified.

3. Geotechnical Impact

An analysis of existing sub-soil conditions, groundwater levels, potential for ground movement and settlement during excavation, and potential impact on adjacent buildings and utility lines is required. This analysis must also include a description of the foundation construction methodology, the amount and method of excavation, and measures to prevent any adverse effects on adjacent buildings and utility lines.

Excavation for the Proposed Project will extend below the existing groundwater level. Therefore, an analysis is required of the impact of foundation supports of adjacent structures. Measures to ensure that groundwater levels will not be lowered during or after construction must be described.

4. Solid Wastes

The generation of solid wastes (construction period and operation of the project) and of biomedical wastes and plans for removal and disposal must be described. Measures to promote recycling and reduction of waste generation shall be required and described in the DPIR.

5. Construction Impacts

A construction impact analysis must include a description and evaluation of the following:

(a) potential dust and pollutant emissions and mitigation measures to control these emissions and avoid adverse impacts on patients of the adjacent hospital facilities.

(b) potential noise impact and mitigation measures to minimize increase in noise levels and avoid any adverse impacts on patients of the adjacent hospital facilities.

(c) location of construction staging areas and construction worker parking.

(d) construction schedule, including hours of construction activity.

(e) access routes for construction trucks and anticipated volume of construction traffic.

(f) method of demolition of the existing buildings on site, control of emissions, removal of asbestos materials, and disposal of demolition waste, including identification of disposal site.

(g) measures to protect the public safety of pedestrians in the vicinity of the work areas and patients in adjacent hospital facilities.

6. Rodent Control

An analysis of the impact of the Proposed Project's construction on rodent populations and a description of the proposed rodent control program, including frequency of application, and compliance with applicable City and State regulatory requirements is required.

D. URBAN DESIGN COMPONENT

The Proposed Project elements should be developed so as to (1) strengthen the overall urban design character of the Brigham & Women's Hospital Campus, and (2) enhance the relationships among existing buildings. The new construction should be compatible in footprint, massing, height, fenestration, details, and materials with existing campus buildings. The proposed new construction should also reinforce the existing pedestrian environment on and around the site and campus. In addition, the proposed project elements should be designed and constructed so as to minimize the visual impact of the building mass as seen from the view angles of the surrounding community.

To achieve these objectives the scope of the Proposed Project should be broadened to include the following elements:

1. Brigham Green

   The landscape and pedestrian circulation improvements proposed in 1988 should be implemented. Included are tree and lawn planting, wall and fence redesign and construction, reduction in the amount of visually intrusive surface parking and driveways, main portico rehabilitation, new paving, new pedestrian-scale lighting, and new street furniture.

2. Old Peter Bent Brigham Pedestrian Connector

   The north-south pedestrianway connecting Brigham Circle and Shattuck Street through the old Peter Bent Brigham Building should be improved and its legibility enhanced both for the short-term future, while the cafeteria remains in the north side of the building, and for the longer term when the cafeteria can be redesigned or relocated and the north facade and lobby restored.

3. Tackaberry Pedestrian Connector

   A north-south pedestrian way connecting Francis and Shattuck Streets through Ambulatory II and the Proposed Project should be provided. The route should be legible and welcoming with views through the buildings available along the route and at its entrances.

4. Shattuck Street Beautification

   Tree planting, lighting, paving, street furniture, and amenities in accordance with the Shattuck Street Landscape Plan should be provided as a part of the Proposed Project.

5. Shattuck Street Pedestrian Bridge Options

   A below-grade alternative connecting Children's Hospital and the Proposed Project should be investigated and its feasibility documented. If a below-grade connection is not feasible, the pedestrian bridge should be designed with respect for its aesthetic impact on the Shattuck Street landscape and its significance as a gateway to the institutions.

6. Patient Tower Bridge

The bridge connecting the Proposed Project to the Patient Tower should be designed so that it respects the context of the surrounding buildings and serves as an aesthetic asset to the Proposed Project.

In order to determine that the Proposed Project is (a) architecturally compatible with surrounding structures; (b) exhibits an architectural concept that enhances the urban design features of the area in which it is located; and (c) augments the quality of the pedestrian environment, the following items must be submitted:

1. Written description of program elements and space allocation for each element.

2. Plan for the surrounding area and district and sections at an appropriate scale (1" = 50' or larger) showing relationships of the proposed project to the surrounding area and district:

   a. massing

   b. building height

   c. scaling elements

   d. open space

   e. major topographic features

   f. pedestrian and vehicular circulation

   g. land use

3. Black and white 8"x10" photographs of the site and neighborhood

4. Sketches and diagrams of earlier proposals to clarify design issues and massing options

5. Eye-level perspective (reproducible line drawings) showing the proposal in the context of the surrounding area

6. Aerial views of the project

7. Site sections at 1" = 20' or larger showing relationships to adjacent buildings and spaces

8. **Site plan at an appropriate scale (1" = 20' or larger) showing:**

    a. general relationships of proposed and existing adjacent buildings and open space

    b. open spaces defined by buildings on adjacent parcels and across streets

    c. general location of pedestrian ways, driveways, parking, service areas, streets, and major landscape features

    d. pedestrian, handicapped, vehicular and service access and flow through the parcel and to adjacent areas

    e. survey information, such as existing elevations, benchmarks, and utilities

    f. phasing possibilities

    g. construction limits

9. Massing model at 1" = 40' for use in the Authority's base model and a study model at 1" = 16' showing facade design.

10. Drawings at an appropriate scale (e.g., 1" = 8') describing architectural massing, facade design and proposed materials including:

    a. building and site improvement plans

    b. elevations in the context of the surrounding area

    c. sections showing organization of functions and spaces

    d. preliminary building plans showing ground floor and typical upper floor(s)

11. Proposed schedule for submittal of design development materials

Submission materials for Design Development and Contract Documents submissions can be found in Appendix 3.

E. HISTORIC RESOURCES COMPONENT

The DPIR must include an historic resource analysis which assesses the impacts of the Proposed Project's height, scale, massing, and other relevant environmental factors on any historic districts or buildings in the vicinity or on the site of the Proposed Project. In addition, the DPIR must include an assessment of the potential presence of any archaeological resources which may be disturbed by the construction of the Proposed Project.

F. INFRASTRUCTURE SYSTEMS COMPONENT

The DPIR must include a thorough assessment of anticipated volume requirements/generation for water, sewage, and electricity/energy, telephone, gas, cable/computer, fire and emergency or other special systems which may be specific to hospital requirements, such as biomedical waste screening.

The applicant's submission must include an evaluation of the Proposed Project's impacts on the capacity and adequacy of existing water, sewerage, energy (including gas and steam), and electrical (including telephone, fire alarm, computer, cable, etc.), and utility systems, and the need reasonably attributable to the proposed project for additional systems facilities. In the special case of the Longwood Medical Area, the increment in energy needs should be measured against MATEP's available capacity.

Any system upgrading or connection requiring a significant public or utility investment, or creating a significant disruption in vehicular or pedestrian circulation, or affecting any public or neighborhood park or streetscape improvements, comprises an impact which must be mitigated. The Applicant must research and demonstrate anticipated impacts in this regard, including specific mitigation measures, and must include all other proposed projects in the vicinity which have submitted a PNF or detailed master plan buildout as background for analysis.

In the case of the Brigham & Women's Clinical Support Facility, consideration should be given to the upgrading or reconfiguration of existing connections, including the potential upgrading of any combined sewerage systems to separate storm drain and sanitary sewer systems. Additionally, the use of construction methodologies and phasing which will avoid interruption of infrastructure systems service to existing hospital complexes should be discussed.

Thorough consultation with the planners and engineers of the utilities will be required, and shall be referenced in the Infrastructure Component report. It should be noted, however, that it is likely most of the submission information requested above may be addressed in a brief response format.

Appendix 1

REQUIRED FINANCIAL INFORMATION

REQUIRED FINANCIAL INFORMATION
BRIGHAM & WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY

DEVELOPMENT PRO FORMA includes all the information normally found in a development pro forma, by phase. This includes, but is not limited to:

- Land costs, per land square foot and total, by parcel, including any incremental disposition cost attributed to the project.
- Attribution of acquisition expense over project components (per FAR square foot, clinical, research, office, hotel, etc.)
- All hard costs on a per-unit and total basis by phase (disaggregated into base building, tenant improvement work, site work, furniture, fixtures and equipment, FF&E, etc.)
- All soft costs on a per-unit and total basis, (disaggregated into individual line items such as architectural, engineering, legal, accounting, and developer's fees, and any other professional fees, insurance, permits, etc.)
- All contingencies, on a per-unit and total basis, by phase (specify whether contingency is on hard costs, soft cost, or total cost).
- All assumptions regarding financing terms on acquisition, pre-development, construction and permanent loans, by phase (including financing fees, interest rates, drawdown assumptions, terms, participations, amortization).
- Calculation of housing and jobs linkage obligations, and anticipated payment method (over term of obligation or on a net present value basis).
- Any other project-related expenses not within any of the above categories.
- Calculation of Total Development Cost (TDC) by component, including total and per unit breakdown (e.g., per square foot clinical, research, office, hotel, etc.).
- Sources of debt and equity for total project costs.
- Projected financing sources, including bond issuing agencies such as HEFA or MIFA, banks, institutional investors, private, corporate or government donors (an analysis of

the costs versus benefits of the financing options, including interest costs and loan terms, as well as a comparison between available sources, should be included).

10-YEAR OPERATING PRO FORMA includes all the information normally found in an operating pro forma, on a yearly basis. This includes, but is not limited to:

- Tabulation of gross and net (leasable) square feet for all clinical, research, office, hotel or other use spaces.
- Schedule of all rents on a per square foot and total basis of space not operated directly by the institution.
- Anticipated operating expenses on per square foot and total basis, and clear explanation of division of expenses between owner and tenant (includes all commercial space and hotel).
- Tenant inducements, including rent concessions (indicate magnitude of discount from market rates), free rent, tenant improvement allowances, etc. for commercial space.
- All other expense assumptions including property management fees.
- Anticipated leasing patterns (15 year, 10 year, etc.), lease-up rates, etc., for commercial space.
- Calculation of debt service.
- Anticipated timing of future refinancing.
- For research space, projections of grant income from government, corporate, philanthropic, or other entities.

Appendix 2

TRANSPORTATION ACCESS PLAN
SCOPE OF SERVICES

SCOPE OF SERVICES
TRANSPORTATION ACCESS PLAN
BRIGHAM & WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY
BOSTON, MASSACHUSETTS

SCOPE OF SERVICES

A. DESCRIPTION OF SERVICES

Brigham & Women's Hospital will prepare a Transportation Access Plan for the proposed new construction project in accordance with the requirements of the Boston Redevelopment Authority (BRA) and the Boston Transportation Department (BTD). The Access Plan will include the following:

- A definition of existing traffic, parking and transit conditions in the area.
- An evaluation of the project's short-term traffic impacts related to construction activity.
- An evaluation of project impacts on traffic, parking and public transportation.
- Consideration of loading and service vehicles.
- Identification of appropriate measures to mitigate project impacts.
- Monitoring of project impacts and travel characteristics.

The Access Plan will incorporate information from previous transportation studies conducted in the area. Other significant projects which will influence area travel demands will be considered in the study.

B. STUDY AREA

The study will be limited to the area shown in Figure 1. Since the primary access to the project area is provided via Huntington Avenue, Francis Street, Longwood Avenue, Shattuck Street, Binney Street, and Brookline Avenue, the traffic analysis will focus on these roadways and the following intersections:

(1) Francis Street and Huntington Avenue; and
(2) Francis Street and Brookline Avenue.

C. DEFINITION OF TASKS

Task 1 - Identification of Existing Transportation Conditions

Brigham & Women's Hospital will compile data on supply and usage characteristics of the various transportation systems within the study area.

1.1 Traffic. New traffic data will be collected where counting is necessary to expand upon available information. Based on data from all sources, a traffic volume network will be developed to represent traffic conditions when Francis, Shattuck and Binney Streets are not under construction.

1.2 Parking. Parking characteristics near the site will be defined. Information from the Transportation Master Plan relating to current utilization of public and private spaces, purposes of users, rates, etc. at all facilities which will be effected by the project, will be included.

1.3 Transit. Public transportation service and ridership information available from the MBTA or from previous reports will be presented.

Task 2 - Evaluation of Transportation Impacts

Expected long-term transportation impacts in the study area will be estimated and evaluated.

2.1 Trip Generation. The development program will be analyzed to estimate net new peak-hour and daily trips by mode. To estimate net new trips by mode, time of day, and direction, travel demand data will be gathered from a selected group of faculty and research assistants who will be occupying the new facility. Such information will include work patterns (start and end times), mode of arrival, auto occupancy, and residence location.

2.2 Conditions to be Analyzed. The following time frames and conditions will be analyzed:

- 1990 Existing
- 1993 No-Build (assuming the project is not built), and
- 1993 Build (assuming No-Build traffic plus project trips, net of trips associated with structures to be demolished).

2.3 Background Development. Building construction projects to be included in the No-Build and Build evaluations will be defined and reviewed with BRA and BTD staff prior to the analysis.

2.4 Impact Analysis. Net new trips expected to be created by the proposed development will be added to the traffic expected under No-Build conditions. AM and PM peak hour impacts will be analyzed as described below:

1. Traffic Impacts - Volume/capacity ratio (V/C), delay, and level-of-service (LOS) calculations at the analysis intersections will be completed.

2. Parking Impacts - The increased parking demand will be compared with projected available supply to identify deficiencies. The analysis will discuss long-term vs. short-term parking needs. The impact of the project on parking demand at other Brigham & Women's parking facilities and public parking facilities will be analyzed.

3. Loading/Service/On-Site Circulation - Accommodation of trucks and service vehicles on the site will be discussed, as will site circulation and on-site truck maneuvering.

4. Transit Impacts - The number of transit trips generated by the project will be compared with area transit route capacity.

Task 3 - Impacts During Construction Period. The transportation assessment will include an estimate, insofar as is possible at present, of the impacts of the project during the construction period, including the following:

1. Estimated number of daily construction worker trips by mode;

2. Frequency of truck movements and construction activities;

3. Provisions for construction worker parking and construction materials deliveries;

4. Temporary storage of construction equipment and materials; and

5. The need (if any) for street occupancy permits during construction.

6. A Construction Management Plan fully detailing these issues must be submitted to and approved by BTD prior to the issuance of a building permit.

Task 4 - Development of Mitigation Measures. Mitigation measures which would lessen the impacts of the proposed project on the transportation system will be identified. The effect of these measures will be determined either through application of analysis techniques identified under Tasks 2 and 3 or through appropriate qualitative review. Depending on the extent of transportation deficiencies caused by the project, mitigation measures may include:

- Measures to minimize trip generation;
- Roadway/traffic operation improvements; and
- Transit improvements.

Specific commitments to be made by the developer will be identified.

Task 5 - Report Preparation. The results of the above effort will be incorporated into a "Transportation Access Plan" which will describe the work performed during the study and document the study process, procedures, and findings for use by the BRA and the BTD.

Appendix 3

SUBMISSION REQUIREMENTS FOR DESIGN DEVELOPMENT AND CONTRACT DOCUMENTS SUBMISSIONS

Phase II Submission: Design Development

1. Revised written description of project.

2. Revised site sections.

3. Revised site plan showing:

    a. Relationship of the proposed building and open space and existing adjacent buildings, open spaces, streets, and buildings and open spaces across streets.

    b. Proposed site improvements and amenities including paving, landscaping, lighting and street furniture.

    c. Building and site dimensions, including setbacks and other dimensions subject to zoning requirements.

    d. Any site improvements or areas proposed to be developed by some other party (including identification of responsible party).

    e. Proposed site grading, including typical existing and proposed grades at parcel lines.

4. Dimensioned drawings at an appropriate scale (*e.g.*, 1" = 8') developed from approved schematic design drawings which reflect the impact of proposed structural and mechanical systems on the appearance of exterior facades, interior public spaces, and roofscape including:

    a. Building plans

    b. Preliminary structural drawings

    c. Preliminary mechanical drawings

    d. Sections

    e. Elevations showing the project in the context of the surrounding area as required by the Authority to illustrate relationships or character, scale and materials.

5. Large-scale (*e.g.*, 3/4" = 1'-10") typical exterior wall sections, elevations and details sufficient to describe specific architectural components and methods of their assembly.

6. Outline specifications of all materials for site improvements, exterior facades, roofscape, and interior public spaces.

7. Eye-level perspective drawings showing the project in the context of the surrounding area.

8. Samples of all proposed exterior materials.

9. Complete photo documentation (35 mm color slides) of above components including major changes from initial submission to project approval.

Phase III Submission: Contract Documents

1. Final written description of project.

2. A site plan showing all site development and landscape details for lighting, paving, planting, street furniture, utilities, grading, drainage, access, service, and parking.

3. Complete architectural and engineering drawings and specifications.

4. Full-size assemblies (at the project site) of exterior materials and details of construction.

5. Eye-level perspective drawings or presentation model that accurately represents the project, and a rendered site plan showing all adjacent existing and proposed structures, streets and site improvements.

6. Site and building plan at 1" - 100' for Authority's use in updating its 1" = 100" photogrammetric map sheets.

Phase IV Submission: Construction Inspection

1. All contract addenda, proposed change orders, and other modifications and revisions of approved contract documents which affect site improvements, exterior facades, roofscape, and interior public spaces shall be submitted to the Authority prior to taking effect.

2. Shop drawings of architectural components which differ from or were not fully described in contract documents.

BOSTON,
REDEVELOPMENT
AUTHORITY

Raymond L. Flynn
Mayor

Stephen Coyle
Director

One City Hall Square
Boston, MA 02201
(617) 722-4300

June 20, 1991

Mr. Nicholas J. Johnson
Vice President
Administrative Services
Brigham & Women's Hospital
75 Francis Street
Boston, MA 02115

Dear Mr. Johnson:

Re: Brigham & Women's Hospital Clinical Support Facility

This letter is the Preliminary Adequacy Determination (the "Determination") of the Boston Redevelopment Authority (the "BRA") with respect to the Draft Project Impact Report (the "DPIR") for the proposed Clinical Support Facility (the "Project"), submitted to the BRA on February 20, 1991.

The BRA is issuing this Determination pursuant to Section 31-5 of the Boston Zoning Code (the "Code"). This Determination requests information required by the BRA for its review pursuant to Article 31 of the Code.

PREAMBLE

The BRA is reviewing the Project pursuant to multiple sections of the Code. With the consent of the Proponent, Brigham & Women's Hospital, the BRA is reviewing the Project pursuant to Article 31 of the Code, Development Review Requirements, which sets out a comprehensive procedure for project review, and requires the issuance of a Final Adequacy Determination prior to issuance of a building permit. The Final Adequacy Determination is issued upon determination by the BRA that the Final Project Impact Report (the "FPIR") is satisfactory.

In addition, the Project requires exceptions under Article 6A of the Code, and Development Impact Project ("DIP") approval pursuant to Articles 26A and 26B of the Code. The Project, with the related Tower Lobby and West Plaza projects, required approval by the BRA and the Boston Zoning Commission (the "Zoning Commission") of a

Third Amendment to and Restatement of the Development Plan for Planned Development Area No. 10, in accordance with Section 3-1.A.a. of the Code. BRA approval of this Third Amendment was granted after a public hearing on March 27, 1991. The substantive review requirements imposed by the aforementioned sections of the Code address related, but not identical, issues. Therefore, the BRA is incorporating its review of zoning relief for the Project into the Article 31 process to eliminate regulatory duplication and consolidate the Project's review into one process and one set of documents.

PROJECT REVIEW

On the basis of the submitted DPIR, the Proponent applied to the Zoning Commission for a Third Amendment to and Restatement of Development Plan No. 10 under Section 3.1.A.a. of the Code. Development Plan approval requires a detailed development plan for the Project, setting forth the proposed location, appearance of structures, open space and landscaping, proposed uses of the area, densities, proposed traffic circulation, parking and loading facilities, access to public transportation, proposed dimensions of structures, and may include proposed building elevations, schematic layout drawings and exterior building materials and other information as required by the BRA. As noted above, the BRA granted approval of a Third Amendment to and Restatement of Development Plan No. 10 after a public hearing held on March 27, 1991. A hearing before the Zoning Commission was held on April 24, 1991, at which time the Zoning Commission approved the Third Amendment pursuant to Section 3.1.A.a. of the Code.

The Project also requires approval by the Board of Appeal of exceptions under Article 6A for the following deviations from the Code:

- Side Yard, Front Yard, and Rear Yard
- Parapet setback
- Floor Area Ratio
- Off-Street Loading
- Reconfiguration of parking within a Restricted Parking Overlay District
- Conditional use - ancillary uses

The Brigham & Women's Hospital, Inc. filed appeals with the Inspectional Services Department requesting such zoning relief on April 8, 1991.

In addition, the Project requires approval by the Board of Appea of an exception under Article 6A for a violation of front yar requirements within Planned Development Area No. 29, to allo construction of the above-ground pedestrian bridge which wil connect the Project, contained within PDA No. 10, to Children'

Hospital, located on the opposite side of Shattuck Street, within PDA No.29. The Children's Hospital Corporation filed an appeal with the Inspectional Services Department requesting such an exception on April 8, 1991.

The Project also requires DIP approval pursuant to Articles 26A, Development Impact Projects - Housing. Prior to receiving the zoning relief listed above, the Proponent must meet the DIP requirements, pursuant to Sections 26A-3 and 26B-3 of the Code.

The Proponent appeared before the Zoning Board of Appeal to seek the zoning relief listed above on May 21, 1991, and was granted such relief.

But for the required corrections, clarifications, and additional information referenced in the attached Technical Appendix, the DPIR submitted is sufficient to satisfy the scoping requirements.

We look forward to reviewing the Final Project Impact Report.

Sincerely,

Gerard Kavanaugh
Director of Institutional Planning

TECHNICAL APPENDIX
TO THE
PRELIMINARY ADEQUACY DETERMINATION
FOR
BRIGHAM AND WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY

I. DEVELOPMENT REVIEW REQUIREMENTS - ARTICLE 31

Article 31 of the Code institutes a process by which large-scale development projects will be reviewed by the BRA. In its review of the DPIR, the BRA has identified certain components which are insufficient and which the Proponent must modify, and additional information which the BRA requires in order to issue a final Adequacy Determination. The following is a description of the sufficiency of the materials submitted in the DPIR, and the additional materials which the Proponent must include in the FPIR.

A. EXECUTIVE SUMMARY

On page I-2, the area description should also include the residential properties along Francis Street, which constitute an integral element of the surrounding neighborhood.

B. GENERAL INFORMATION

No description of the Project is given in this section; it is found only later in the Urban Design Component. A project description with physical parameters should be provided here to provide the context upon which to evaluate the adequacy of the impact assessments.

On pages II-4 and II-6 several site plans are referenced but no information is given as to where they may be found. Copies of these plans, or plans giving the information specified in the text, were not included with the DPIR, and should be included in the FPIR.

C. TRANSPORTATION COMPONENT

The Proponent is currently revising a Transportation Access Plan Agreement, finalization of which must occur prior to the formal submission to the BRA of Design Development documents.

The following are comments made in regard to the Draft Transportation Access Plan which appears in Appendix E to the DPIR:

Figures 3,
6, and 7: There appear to be errors in the directions of the eastbound arrows on Francis Street. Also, the street should be labeled.

Table 10: The decrease in delay (Build vs. No-Build) for Huntington Ave./Francis Street in the Morning Peak Hour appears to be an error, unless there is some circulation improvement which has not been explained. This should be clarified.

Pg. 24: Although the construction workers would not depart during the evening peak hour (4-5p.m.), they would still depart at a time when local traffic shows high volumes approaching peak-hour volumes (see Fig.4). Therefore, their impact may not be insignificant. This condition should be investigated further.

D. ENVIRONMENTAL COMPONENT

1.0 Wind Qualitative Assessment

The qualitative wind analysis indicates that the Proposed Project will have minimal impact on pedestrian level wind conditions, increasing winds in some locations (primarily along Shattuck Street, around the corners of the patient towers, and in the open space between the new Clinical Support Facility (CSF) and the northeast patient tower) but not to dangerous or unacceptable levels. The increase in wind along Shattuck Street should have little impact, since Shattuck Street is not a major pedestrian link. However, the increased wind in the open space between the CSF and the northeast patient tower, proposed as an exterior courtyard for eating and socializing, may make the courtyard an uncomfortable place for these activities (except for hot summer days when a breeze may be welcomed). (See also shadow comments below.) Appropriate mitigation measures (e.g., landscaping) should be proposed.

On page III-13, the discussion of the impact of the CSF on northwest winds contains contradictory statements, indicating both increased windiness along Shattuck Street and a significant reduction in the possibility of increased windiness along Shattuck Street due to the extension of the Tower Lobby toward Shattuck Street.

2.0 Shadow Impacts

The major shadow impacts (Spring through Fall) will fall on Shattuck Street and the proposed courtyard between the CSF and the northeast patient tower (the impact on the latter will not be insubstantial as claimed by the DPIR discussion). The extensive shadowing of the courtyard may make it uncomfortable for proposed eating and socializing activities (except during hot summer days), along with the increased windiness noted above. Winter shadow impacts will be minimal, primarily because of extensive existing shadows in the area; the principal impacts will occur at midday.

On Figure III-14, the shadow cast by the CSF on the Wolbach Building does not appear to be correct.

3.0 Geotechnical Impacts

Pg.III-40 (Construction Dewatering): Any disposal through th sewer system must comply with the appropriate regulations of th Boston Water and Sewer Commission. The excess water must b filtered to remove sediments prior to disposal. The disposal o water from construction dewatering should therefore be described.

6.0 Rodent Control

The FPIR must provide the information requested in the scopin determination regarding the frequency of application of rodent control measures.

E. URBAN DESIGN COMPONENT

The information presented in the DPIR, together with subsequent required submissions, represents an acceptable schematic design fo the Proposed Project.

F. HISTORIC RESOURCES ANALYSIS

The FPIR must restate and document the assertion that the Proposed Project will have no impacts on nearby historic or archaeological resources as required in the scoping determination.

G. INFRASTRUCTURE SYSTEMS COMPONENT

This section of the DPIR does not respond adequately to the scoping requirements. No information is provided regarding project impacts on the existing water and sewer systems (adequacy and capacity) or on other utility/energy systems; no information is provided on electrical, energy, gas, communication, and emergency systems, any necessary upgrading of existing utilities, and cumulative impacts; and there is no indication of any consultation with the affected utilities, as required by the scope. Also, information requested in the BWSC letter, for the most part, has not been provided.

The Infrastructure Systems Component of the BWHCSF DPIR, Section VI, must contain the following information for approval of the FPIR:

1) Estimates of heating energy consumption (HVAC) and electrical demands are required.

2) Confirmation of the ability of MATEP to supply the Proposed Projects' HVAC (chilled water, steam) and electrical needs is required. The figures supplied in (1) above should be compared to the capacity of MATEP for each category.

3) Confirmation of the ability of the telephone system to absorb

the new connections without changes in capacity is required.

4) An evaluation of the Proposed Project's impacts on the capacity of existing water, sewage and storm drain systems is required. This should be accompanied by a diagrammatic map showing existing and proposed connection locations, line capacities, direction of flow, etc. This information was requested in the BRA scoping determination as well as in the BWSC comments.

5) Response to the BWSC query regarding the return or discharge of the steam condensate is required.

6) Confirmation of the ability of the Project Proponent to construct the building and to connect to utility services without interruption of the utility needs of area users is required.

II. AGREEMENTS

In addition to completing the Development Review Requirements process, the agreements and plans listed below must be provided in form and content satisfactory to the appropriate signatory public agencies before building permits may be issued for the Project:

A) Development Impact Project (DIP) Plan pursuant to 26A of the Code and Development Plan pursuant to Section 3-1A of the Code;

B) Development Impact Project (DIP) Agreement including provisions for Jobs Contribution Grant and Housing Contribution Grant pursuant to Articles 26A and 26B of the Code;

C) Cooperation Agreement pursuant to Section 31-14 of the Code;

D) Transportation Access Plan (TAP) Agreement;

E) Traffic Maintenance Plan in conformity with the City's Construction Management Program;

F) Boston Residents Construction Employment Plan, pursuant to Chapter 12 of the Ordinances of 1986 of the City of Boston, as amended by Chapter 17 of said Ordinances, and Executive Order Extending Boston Residents Job Policy, signed by the Mayor on July 12, 1985; and

G) First Source Agreement with the Mayor's Office of Jobs and Community Services.

APPENDIX B

Environmental Notification Form Submission to Executive Office of Environmental Affairs, December 15, 1989, and Certificate of the EOEA Secretary, January 25, 1990

BRIGHAM & WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY

ENVIRONMENTAL NOTIFICATION FORM

December 15, 1989

BWH

Submitted By:

THE BRIGHAM & WOMEN'S HOSPITAL, INC.
75 Francis Street
Boston, Massachusetts 02115

Prepared by:

HMM Ref. No. 3495/ENV/1690

December 15, 1989

Dear Reviewer:

Enclosed is an Environmental Notification Form for a Clinical Support Facility proposed by Brigham & Women's Hospital in the Longwood Medical Area section of Boston. The proposed project involves the construction of a 181,782 square foot obstetric services building. The Tackaberry Building, currently located on the site, will be demolished; services currently housed there will be relocated elsewhere on the Brigham & Women's campus. The project is subject to MEPA review as a result of a request for financial assistance from the Commonwealth's Health and Educational Facilities Authority (HEFA).

Comments should be submitted to the MEPA office within 30 days of the notice of this ENF in the Environmental Monitor:

Secretary: EOEA
100 Cambridge Street - Room 2000
Boston, MA 02202
ATTN: MEPA Unit
(617) 727-5830

If you have any questions, please call me.

Very truly yours,

Mitchell L. Fischman
Senior Project Manager

MLF:ldg

Enclosure

ENVIRONMENTAL NOTIFICATION FORM

I. SUMMARY

A. Project Identification

1. Project Name Brigham & Women's Clinical Support Facility
Address/Location 66-72 Shattuck Street
City/Town Boston, Massachusetts 02115
2. Project Proponent Brigham & Women's Hospital
Address 75 Francis Street Boston, Massachusetts
3. Est. Commencement March 1991 . Est. Completion July 1993 .
Approx. Cost $ 48,000,000 . Status of Project Design 10 % Complete.
4. Amount (if any) of bordering vegetated wetlands, salt marsh, or tidelands to be dredged, filled, removed, or altered (other than by receipt of runoff) as a result of the project.
0 acres 0 square feet.
5. This project is categorically included and therefore requires preparation of an EIR.
Yes ______ No x ?

B. Narrative Project Description

Describe project and site.

Brigham & Women's Hospital (BWH) is located in Boston's Longwood Medical Area. BWH's main campus, which includes the site of the proposed project, is bounded by Huntington Avenue and Binney, Francis and Shattuck Streets. BWH is proposing to construct an 181,782 square foot, eight-story Clinical Support Facility primarily to house obstetrical services, including a labor & delivery unit, a neonatal intensive care unit, ancillary offices and support staff areas, and an in-house hotel for patients' families. The majority of these services are already located elsewhere on campus in facilities of insufficient size to accomodate present and anticipated demand. The Clinical Support Facility will replace the 35,600 square foot Tackaberry Building, which is currently located on the site. Services housed in the Tackaberry Building will be relocated elsewhere on the BWH campus following its demolition. As with the Tackaberry building, a walkway bridge will connect the building to Children's Hospital; in addition, a connecting bridge will join the new building to the adjacent patient tower.

Construction of the Clinical Support Facility, expected to begin in March 1991 and to be completed by July 1993, will cost approximately $48,000,000. The building is to be designed by Tsoi/Kobus & Associates of Cambridge, who designed the Ambulatory II and Longwood Medical Research Center buildings at BWH and who prepared the Institutional Master Plan program and design studies.

Environmental impacts of the proposed Clinical Support Facility are expected to be limited to minimal construction impacts, as well as minor traffic, historic, and water issues.

Plans for the Clinical Support Facility are incorporated in the BWH Institutional Master Plan and Transportation Access Plan, each of which is on file with the City of Boston.

Copies of the complete ENF may be obtained from (proponent or agent):
Name: Mitchell L. Fischman Firm/Agency: HMM Associates, Inc.
Address 196 Baker Avenue, Concord, MA Phone No. 508 371-4000

1987 THIS IS AN IMPORTANT NOTICE. COMMENT PERIOD IS LIMITED.
For Information, call (617) 727-5830

C. List the State or Federal agencies from which permits or other actions have been/will be sought:

Agency Name	Permit	Date filed; file no.
Department of Public Health	Determination of Need	1 September 1989
Department of Environmental Protection	Sewer Connection Permit	to be filed

D. List any government agencies or programs from which the proponent will seek financial assistance for this project:

Agency Name	Funding Amount
Health and Educational Facilities Authority	$48,000,000

E. Areas of potential impact (complete Sections II and III first, before completing this section).

1. Check all areas in which, in the proponent's judgment, an impact of this project may occur. Positive impacts, as well as adverse impacts, may be indicated.

	Construction Impacts	Long Term Impacts
Inland Wetlands		
Coastal Wetlands/Beaches		
Tidelands		
Traffic	x(minor)	x(minor)
Open Space/Recreation		
Historical/Archaeological		
Fisheries/Wildlife		
Vegetation/Trees		
Agricultural Lands		
Water Pollution		
Water Supply/Use		x(minor)
Solid Waste		x(minor)
Hazardous Materials	x(asbestos)	
Air Pollution		
Noise		
Wind/Shadow		
Aesthetics		
Growth Impacts		
Community/Housing and the Built Environment		

Other (Specify)__________

2. List the alternatives which have been considered.

Obstetric services are integral to the service program provided by Brigham & Women's Hospital. The existing Neonatal Intensive Care Unit and Labor and Delivery Facilities have grown beyond available space. No existing facility on campus can accommodate the proposed Clinical Support Facility program; furthermore, an off-campus location is not feasible. The proposed site currently houses a building (Tackaberry) that is obsolete for its intended purposes. The site is identified in BWH's Institutional Master Plan (as revised October 1989) as the intended location for a Clinical Support Facility.

F. Has this project been filed with EOEA before? No x Yes ______ EOEA No. N/A

G. WETLANDS AND WATERWAYS

1. Will an Order of Conditions under the Wetlands Protection Act (c.131s.40) or a License under the Waterways Act (c.91) be required?
   Yes ______ No x
2. Has a local Order of Conditions been:
   a. issued? Date of issuance N/A ; DEQE File No. N/A .
   b. appealed? Yes N/A ; No N/A .
3. Will a variance from the Wetlands or Waterways Regulations be required? Yes ______ ; No N/A .

II. PROJECT DESCRIPTION

A. Map; site plan. Include an original 8½ x 11 inch or larger section of the most recent U.S.G.S. 7.5 minute series scale topographic map with the project area location and boundaries clearly shown. If available, attach a site plan of the proposed project.

B. State total area of project: 0.5 acres.
Estimate the number of acres (to the nearest 1/10 acre) directly affected that are currently:

1. Developed .... 0.5 acres
2. Open Space/
   Woodlands/Recreation 0.0 acres
3. Wetlands .... 0.0 acres
4. Floodplain .... 0.0 acres
5. Coastal Area .... 0.0 acres
6. Tidelands .... 0.0 acres
7. Productive Resources
   Agriculture .... 0.0 acres
   Forestry .... 0.0 acres
8. Other .... 0.0 acres

C. Provide the following dimensions, if applicable:

	Existing	Increase	Total
Length in miles	N/A	N/A	N/A
Number of Housing Units	N/A	N/A	N/A
Number of Stories	4*	8	8
Gross Floor Area in square feet	35,600*	181,782	181,782
Number of parking spaces	0	0**	0
Total of Daily vehicle trips to and from site # (Total Trip Ends)	12,040	826	12,866
Estimated Average Daily Traffic on road(s) serving site #			
1. Brookline Ave (n. of Francis)	28,280	290	28,570
2. Francis St (e. of Brookline)	14,400	420	14,820
3. Huntington Ave (n. of Francis)	22,000	90	22,090

*to be demolished and replaced #Site defined as entire BWH Campus.

**BWH controls 2,565 spaces. Other public parking garages exist in the immediate area.

D. TRAFFIC PLAN. If the proposed project will require any permit for access to local roads or state highways, attach a sketch showing the location and layout of the proposed driveway(s).

A Transportation Master Plan is on file with the City of Boston Transportation Department and the Boston Redevelopment Authority.

III. ASSESSMENT OF POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS

Instructions: Explain direct and indirect adverse impacts, including those arising from general construction and operations. For every answer explain why significant adverse impact is considered likely or unlikely to result. Positive impact may also be listed and explained.

Also, state the *source* of information or other basis for the answers supplied. Such environmental information should be acquired at least in part by field inspection.

A. Open Space and Recreation

1. Might the project affect the condition, use, or access to any open space and/or recreation area?

Explanation and Source:

No. The proposed project will not adversely affect any open space and/or recreation are The nearest open space is the Harvard Medical School quadrangle.

2. Is the project site within 500 feet of any public open space, recreation, or conservation land?

Explanation and Source:

The proposed project is approximately 500 feet from Joslin Park, a third of an acre ope space which lies near the New England Deaconess Hospital. The proposed project wil not have any impact upon the Park.

B. Historic and Archaeological Resources

1. Might any site or structure of historic significance be affected by the project? (Prior consultation with Massachusetts Historical Commission is advised.)

Explanation and Source:

Massachusetts Historical Commission (MHC) and Boston Landmarks Commission (BLC files list several properties near the proposed project which are deemed to be o significance or of major significance. The proposed project will have little impact o these properties, since it merely replaces an existing structure. BLC survey forms ar attached to this ENF.

2. Might any archaeological site be affected by the project? (Prior consultation with Massachusetts Historical Commission is advised.)

Explanation and Source:

No. There is no known archaeological significance to the site. BWH has submitted thi ENF to MHC for their review.

C. Ecological Effects

1. Might the project significantly affect fisheries or wildlife, especially any rare or endangered species? (Prior consultation with the Massachusetts Natural Heritage Program is advised).

Explanation and Source:

No. The proposed project will not affect fisheries or wildlife, since the site is currentl developed, and is surrounded by developed properties in a built environment.

2. Might the project significantly affect vegetation, especially any rare or endangered species of plant? (Prior consultation with the Massachusetts Natural Heritage Program is advised.)

(Estimate approximate number of mature trees to be removed: 0)

Explanation and Source:

No. The proposed project will not affect vegetation, since the site is currently developed, and is surrounded by developed properties in a built environment.

3. Agricultural Land. Has any portion of the site been in agricultural use within the last 15 years? If yes, specify use and acreage.

Explanation and Source:

No portion of the site has been in agricultural use within the last 15 years.

D. Water Quality and Quantity

1. Might the project result in significant changes in drainage patterns?

Explanation and Source:

No. The site of the proposed project site is currently developed; it is served by City of Boston storm and sanitary sewers. The site drainage system designed for the proposed project will not cause a significant change in the area's existing drainage pattern.

2. Might the project result in the introduction of any pollutants, including sediments, into marine waters, surface fresh waters or ground water?

Explanation and Source:

No. The proposed project will not result in changes to stormwater runoff volumes. No other water pollutants are expected to result from the proposed project. Project design provides for the separation of surface water runoff from sanitary sewage to allow for separate service connections.

3. Does the project involve any dredging? No _x_ Yes ____ Volume _N/A_. If 10,000 cy or more, attach completed Standard Application Form for Water Quality Certification, Part I (314 CMR 9.02(3), 9.90, DEQE Division of Water Pollution Control).

No. The proposed project does not involve any dredging.

4. Will any part of the project be located in flowed or filled tidelands, Great Ponds, or other waterways? (Prior consultation with the DEQE and CZM is advised.)

Explanation and Source:

No. The proposed project will not be located in flowed or filled tidelands, Great Ponds or other waterways. A copy of the ENF has been submitted to DEP.

5. Will the project generate or convey sanitary sewage? No ______ Yes __x__
If Yes, Quantity: _23,000_ gallons per day
Disposal by: (a) Onsite septic systems .... Yes ______ No __x__
(b) Public sewerage systems (location; average and peak daily flows to treatment works) .... Yes __x__ No ______

Explanation and Source:

Title 5 calculations yielded a total quantity of 23,000 gpd. This calculation assumed approximately 26,000 sq. ft. of office space, 70 hospital beds (50 neonatal intensive care unit, 20 labor & delivery) and 100 beds in the 48 room in-house hotel for families of in-patients. Because fixtures in the Clinical Support Facility will comply with standards in the Massachusetts Building Code, sewage flows are expected to be considerably less than Title 5 calculations.

6. Might the project result in an increase in paved or impervious surface over a sole source aquifer or an aquifer recognized as an important present or future source of water supply?

Explanation and Source:

No. The site of the proposed project is already developed. The site does not lie over an aquifer. Consequently, the proposed project will not result in an increase in paved or impervious surface over an aquifer or a future source of water supply.

7. Is the project in the watershed of any surface water body used as a drinking water supply?

Explanation and Source:

No. The project is not in the watershed of any surface water body.

8. Are there any public or private drinking water wells within a 1/2-mile radius of the proposed project?

Explanation and Source:

No. There are not any drinking water wells within a ½-mile radius of the proposed project.

9. Does the operation of the project result in any increased consumption of water?

Approximate consumption 25,300 gallons per day. Likely water source(s) MWRA, BWSC

Explanation and Source:

The project will result in the consumption of 25,300 gallons of water per day based on Title 5 calculations. Because fixtures in the Clinical Support Facility will comply with standards in the Massachusetts Building Code, water consumption is expected to be considerably less than Title 5 calculations.

E. Solid Waste and Hazardous Materials

1. Estimate types and approximate amounts of waste materials generated, e.g., industrial, domestic, hospital, sewage sludge, construction debris from demolished structures. How/where will such waste be disposed of?

Explanation and Source:

Demolition of the Tackaberry Building and excavation for the proposed new construction will generate certain amounts of rubble, fill material and unconsolodated soils. These materials will be disposed of in an approved off-site landfill location.

Infectious waste produced by the services to be housed in the Clinical Support Facility will continue to be sterilized and incinerated in existing BWH facilities on-site.

2. Might the project involve the generation, use, transportation, storage, release, or disposal of potentially hazardous materials?

Explanation and Source:

Asbestos in the existing building to be demolished will be completely removed following State and EPA approved methods, by licensed contractors.

The services provided in the proposed Clinical Support Facility will generate certain quantities of biomedical waste; this waste is already being produced in the facilities that currently house these services. Following on-site sterilization and incineration, this waste will be removed by a licensed contractor to an approved site.

3. Has the site previously been used for the use, generation, transportation, storage, release, or disposal of potentially hazardous materials?

Explanation and Source:

Brigham & Women's Hospital is not aware of the use of this site previously for the use, generation, transportation, storage, release or disposal of potential hazardous materials, with the sole exception of the asbestos built into the Tackaberry Building (see III.E.3).

F. Energy Use and Air Quality

1. Will space heating be provided for the project? If so, describe the type, energy source, and approximate energy consumption.

Explanation and Source:

Steam heat and chilled water for the proposed project will be supplied by the Medical Area Total Energy Plant (MATEP) as part of its current service to BWH.

2. Will the project require process heat or steam? If so, describe the proposed system, the fuel type, and approximate fuel usage.

Explanation and Source:

No. The Clinical Support Facility does not involve industrial processes. The Medical Area Total Energy Plant (MATEP) will supply steam heat and chilled water for heating and air conditioning as part of its current service to BWH.

3. Does the project include industrial processes that will release air contaminants to the atmosphere? If so, describe the process (type, material released, and quantity released).

Explanation and Source:

No. The proposed project will not include industrial processes that will release air contaminants.

4. Are there any other sources of air contamination associated with the project (e.g. automobile traffic, aircraft traffic, volatile organic compound storage, construction dust)?

Explanation and Source:

Construction dust will be mitigated by wetting and other standard dust control procedures. Construction related activity will temporarily increase air contamination, such as CO, NO, and hydro-carbon exhaust emissions. Post-construction traffic related to the proposed project will result in minimal long-term increases in these emissions.

5. Are there any sensitive receptors (e.g. hospitals, schools, residential areas) which would be affected by air contamination caused by the project?

Explanation and Source:

Brigham & Women's Hospital is located in the Longwood Medical Area; a number of sensitive receptors, including hospitals and schools, are located near the proposed project. Minimal air contamination expected as a result of the proposed project (see III.F.4) will not affect these sensitive receptors.

G. Noise

1. Might the project result in the generation of noise?

(Include any source of noise during construction or operation, e.g., engine exhaust, pile driving, traffic.)

Explanation and Source:

Typical construction noise will be generated during construction. No noise generation is expected from the proposed project during operation, except for low-level amounts expected from Heating, Ventilating and Air Conditioning (HVAC) systems.

2. **Are there any sensitive receptors (e.g., hospitals, schools, residential areas) which would be affected by any noise caused by the project?**

   Explanation and Source:
   Brigham & Women's Hospital is located in the Longwood Medical Area; a number of sensitive receptors, including hospitals and schools, are located near the proposed project.

   Noise generated by construction of the proposed project (see III.G.1) will be typical of construction activity. There are several other on-going building projects that will be concurrently under construction in the Longwood Medical Area. After completion, the proposed project will not generate any appreciable noise.

3. **Is the project a sensitive receptor, sited in an area of significant ambient noise?**

   Explanation and Source:

   The proposed project is a sensitive receptor (hospital) located in the Longwood Medical Area of Boston with a number of other hospital care facilities.

H. Wind and Shadow

1. **Might the project cause wind and shadow impacts on adjacent properties?**

   Explanation and Source:

   No. The proposed project is similar in massing and maintains the same footprint as the existing structure on the site. The increased height (from 4 to 8 stories) is not significant; it is not expected to cause wind impacts. Minimal new shadow impacts will result on adjacent properties.

I. Aesthetics

1. **Are there any proposed structures which might be considered incompatible with existing adjacent structures in the vicinity in terms of size, physical proportion and scale, or significant differences in land use?**

   Explanation and Source:

   No. The proposed project is expected to be eight stories in height. This is compatible with other structures at Brigham & Women's Hospital and throughout the Longwood Medical Area. The intended uses for the proposed project are similarly compatible with surrounding hospital and nearby school uses.

2. **Might the project impair visual access to waterfront or other scenic areas?**

   Explanation and Source:

   No. The proposed project will not impair visual access to the waterfront or other scenic areas.

IV. CONSISTENCY WITH PRESENT PLANNING

Discuss consistency with current federal, state and local land use, transportation, open space, recreation and environmental plans and policies. Consult with local or regional planning authorities where appropriate.

Brigham & Women's Hospital is located in the Longwood Medical Area in Boston. The Longwood Medical Area houses a number of hospital care facilities; the greatest concentration is between Brookline Avenue and Huntington Avenue. Brigham & Women's Hospital is proposing this new construction as part of its long range goals and planning principles, as outlined in its Institutional Master Plan, which is on file with the City of Boston and the Boston Redevelopment Authority. A Transportation Master Plan is also on file with the City of Boston. The planned use is compatible with the present land use in the Medical Area.

V. FINDINGS AND CERTIFICATION

A. The public notice of environmental review has been/will be published in the following newspaper(s):

(NAME) Boston Herald **(Date)** 15 December 1989

B. This form has been circulated to all agencies and persons as required by 301 CMR 11.24.

15 December
Date

Nicholas J Johnson
Signature of Responsible Officer or Project Proponent

Nicholas J. Johnson, V.P. Admin
Name (print or type)
Brigham & Women's Hospital
Address 75 Francis Street
Boston, MA 02115
Telephone Number 617 732-5500

15 December
Date

Mitchell L. Fi
Signature of person preparing ENF (if different from above)

Mitchell L. Fischman, Sr. Pr
Name (print or type)
HMM Associates, Inc.
Address 196 Baker Avenue
Concord, MA 01742
Telephone Number 508 371-4000

FORMS OF NOTICE

1) PUBLIC NOTICE OF ENVIRONMENTAL REVIEW

PROJECT: Brigham & Women's Hospital Clinical Support Facility
(Brief description of project)

LOCATION: 66-72 Shattuck Street Boston, MA 02115

PROPONENT: Brigham & Women's Hospital

The undersigned is submitting an Environmental Notification Form ("ENF") to the Secretary of Environmental Affairs on or before 15 December 1989.
(Date)

This will initiate review of the above project pursuant to the Massachusetts Environmental Policy Act ("MEPA", G.L. c. 30, secs. 61, 62-62H). Copies of the ENF may be obtained from:

Mitchell L. Fischman, HMM Associates, Inc. Concord, Massachusetts 01742.
(Name, address, phone number of proponent or proponent's agent)

Copies of the ENF are also being sent to the Conservation Commission and Planning Board of Boston,
(Municipality)
where they may be inspected.

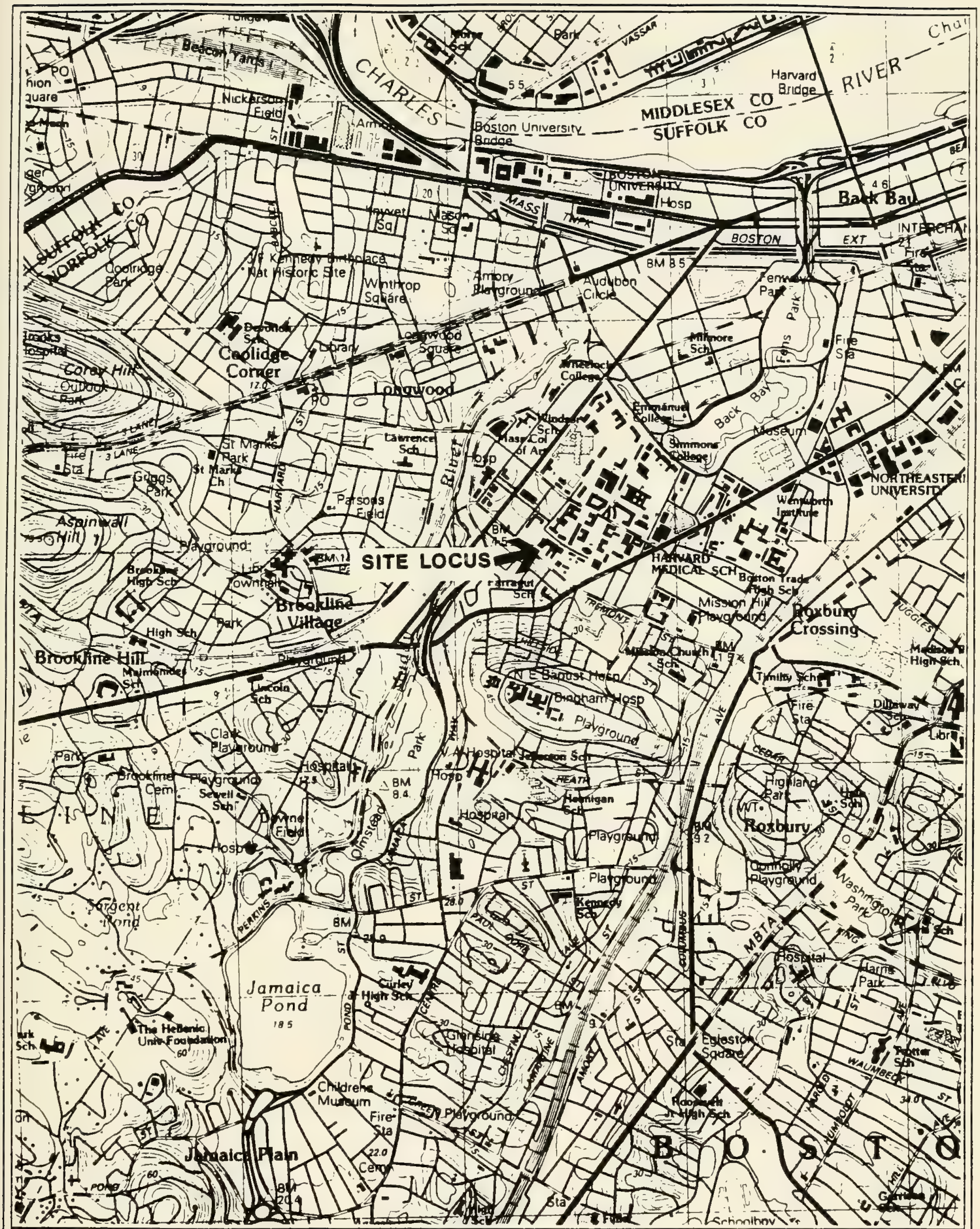
The Secretary of Environmental Affairs will publish notice of the ENF in the Environmental Monitor, will receive public comments on the project for twenty days, and will then decide, within ten days, if an Environmental Impact Report is needed. A site visit and consultation session on the project may also be scheduled. All persons wishing to comment on the project, or to be notified of a site visit or consultation session, should write to the Secretary of Environmental Affairs, 100 Cambridge Street, Boston, Massachusetts 02202, Attention MEPA Unit, referencing the above project.

By Mitchell L. Fischman
(proponent)
(For BWH)

ATTACHMENTS

ATTACHMENT 1

LOCUS MAP

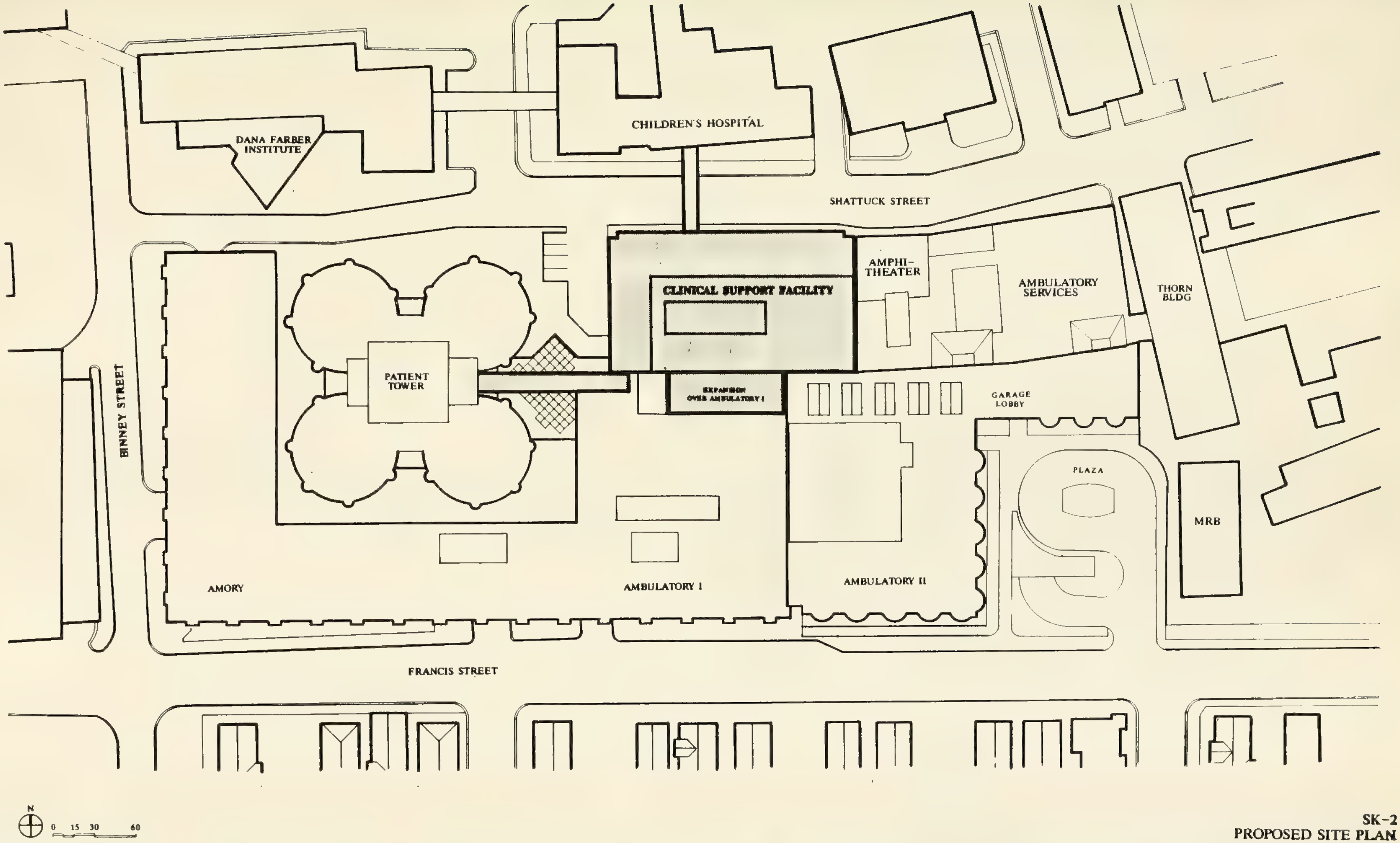


ATTACHMENT 1

LOCUS MAP

ATTACHMENT 2

SITE PLANS



SK-2
PROPOSED SITE PLAN

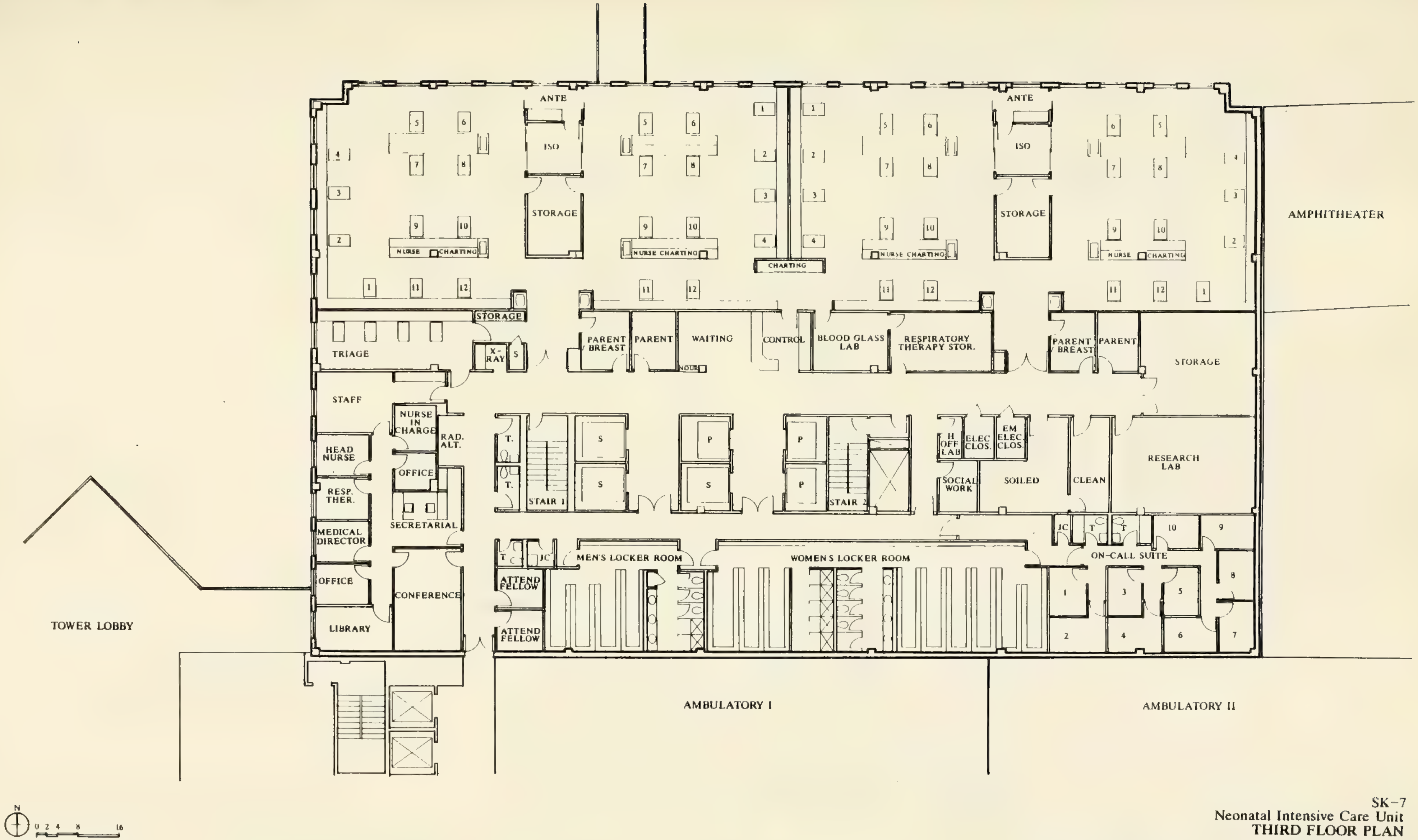
BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

Tsoi/Kobus & Associates • Architects

September 1, 1989

ATTACHMENT 3

FLOOR PLANS AND CROSS-SECTION

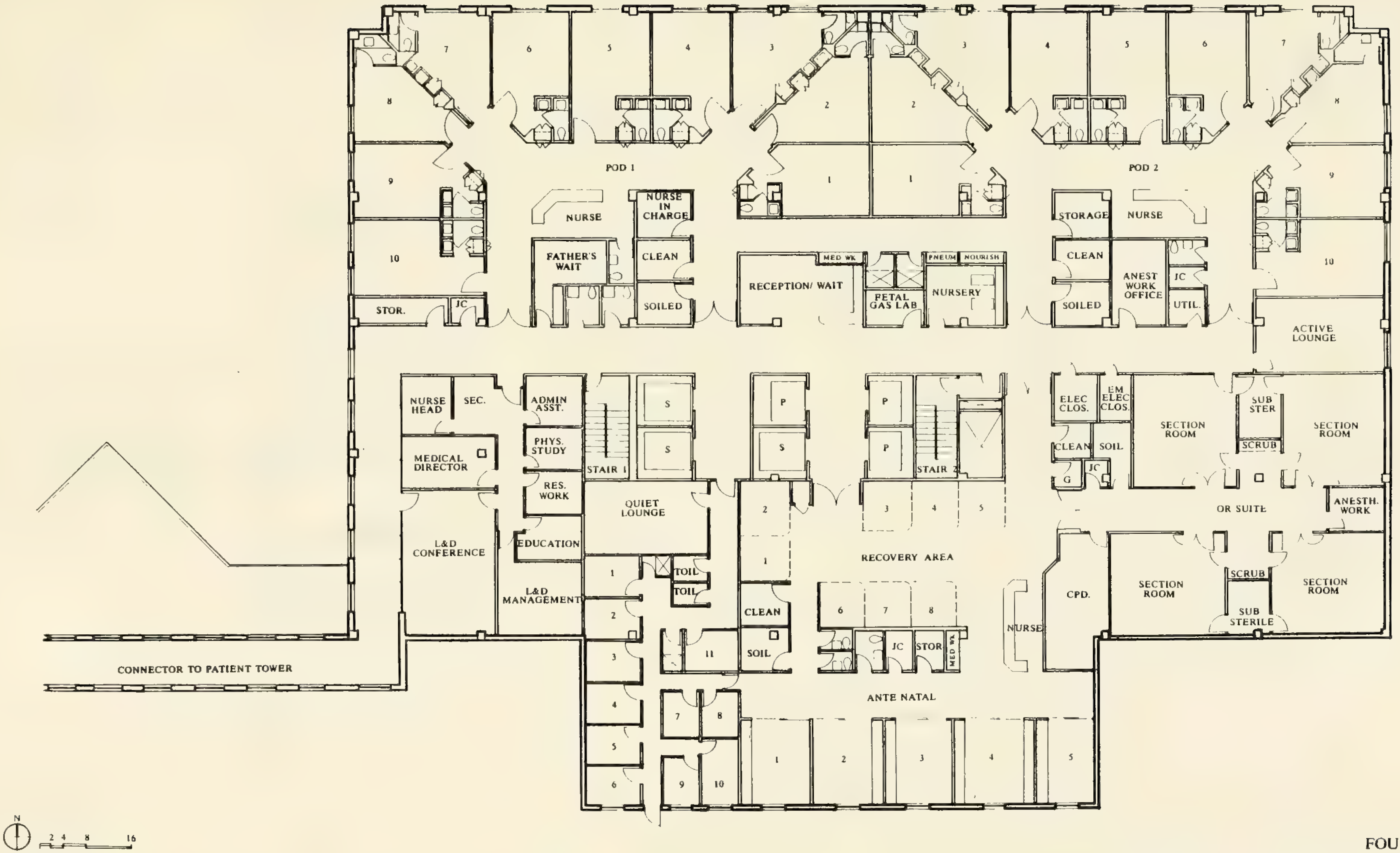


SK-7
Neonatal Intensive Care Unit
THIRD FLOOR PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

Tsoi/Kobus & Associates • Architects

September 1, 1989

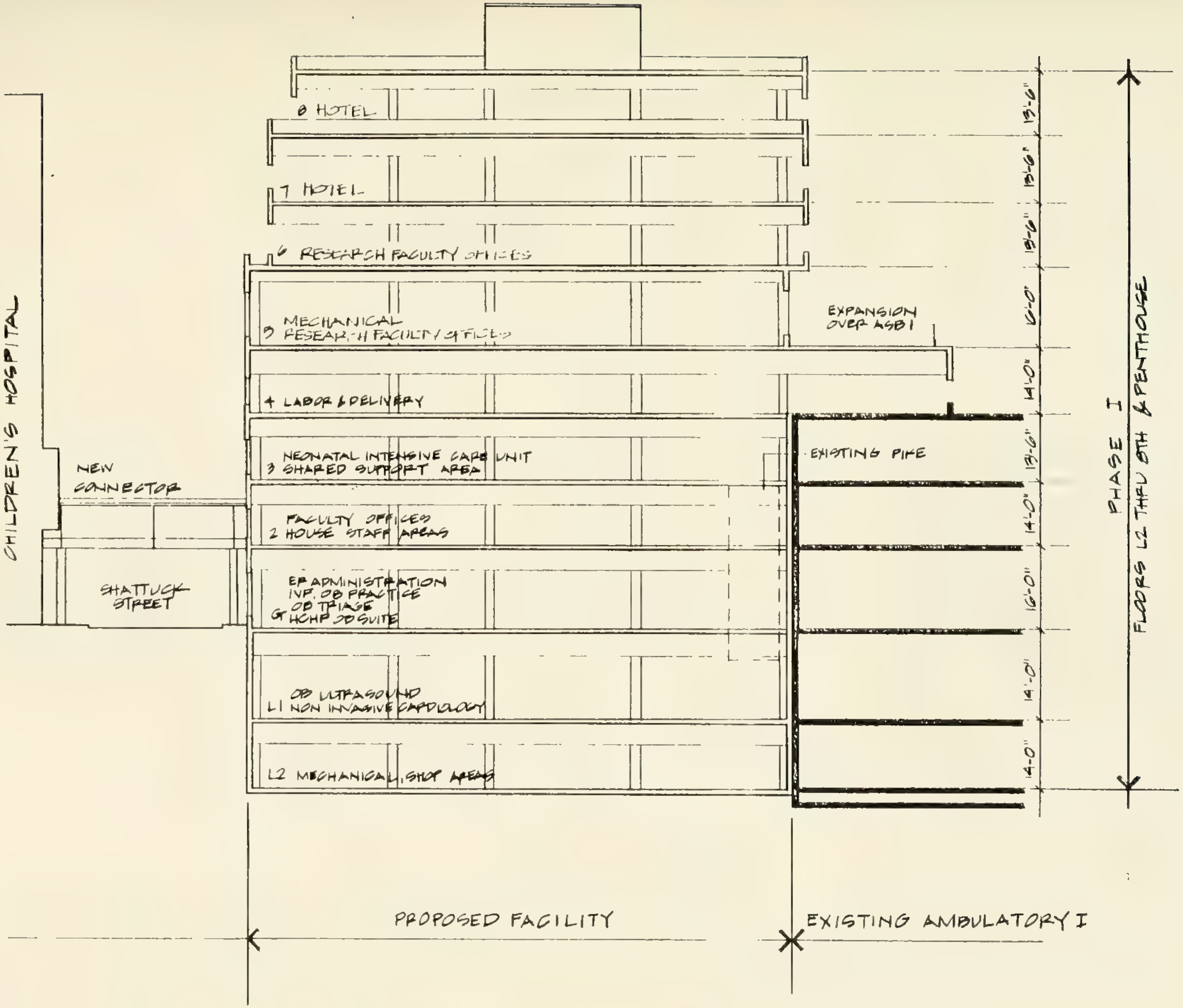


SK-8
Labor and Delivery
FOURTH FLOOR PLAN

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

Tsoi/Kobus & Associates • Architects

September 1, 1989

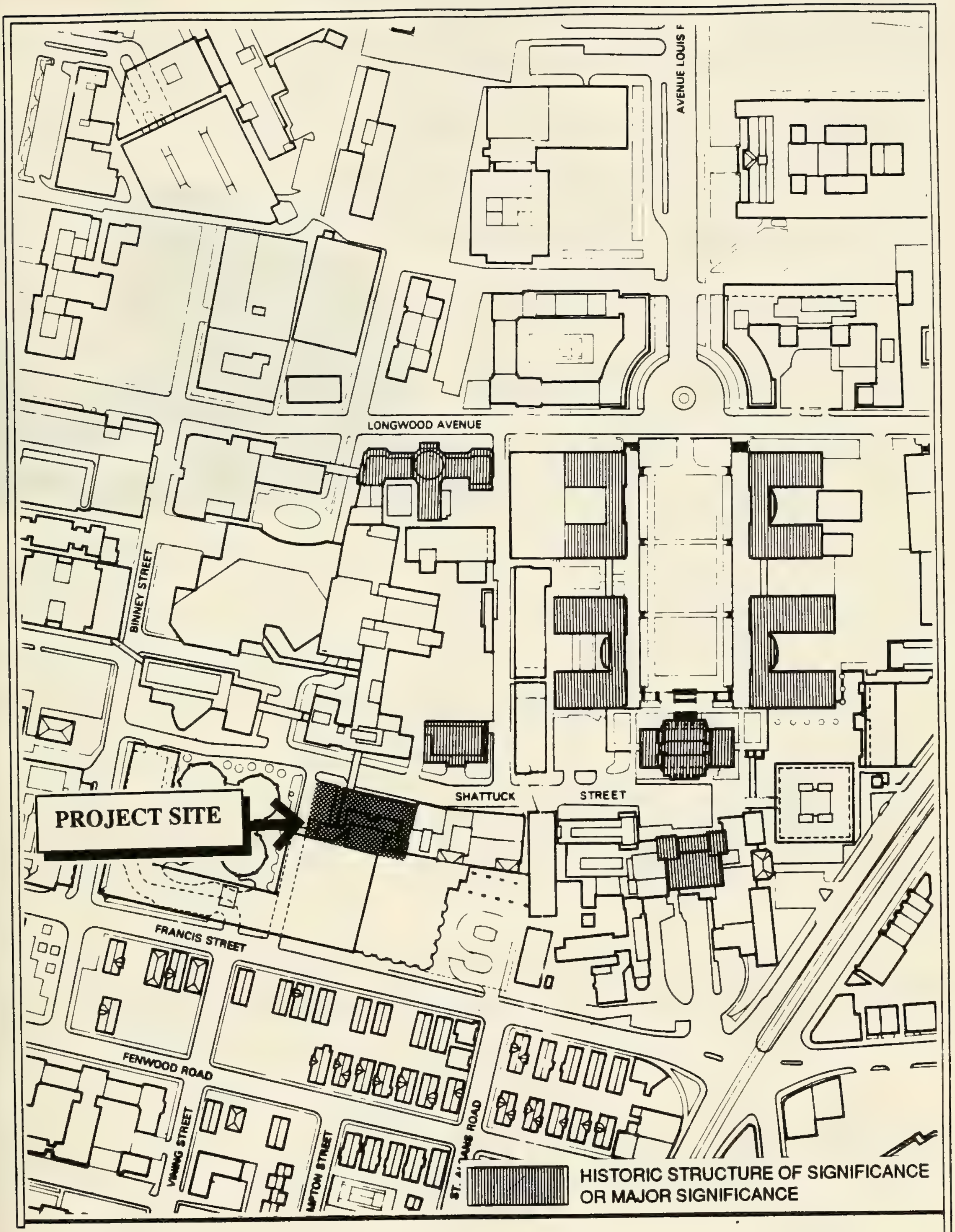


SECTION THROUGH NEW BUILDING

TS01/KOBUS & ASSOC. 11/13/89 SCALE 1/16" = 1'-0"

ATTACHMENT 4

BOSTON LANDMARKS COMMISSION
SURVEY FORMS



LOCATION OF HISTORIC STRUCTURES NEAR PROJECT SITE

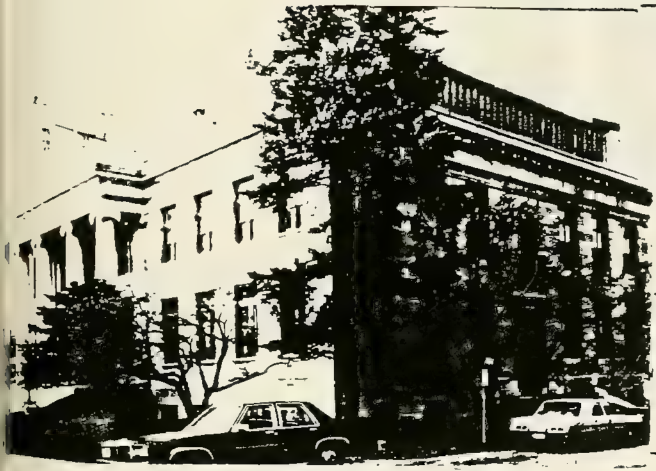
BOSTON LANDMARKS COMMISSION Building Information Form Form No. 148 Area Fenway

ADDRESS 55 SHATTUCK COR. NEAR BLACKFAN ST.

NAME (present) ______ (original) Thomas Morgan Rotch, Jr. Memorial Hospital for Infants

MAP No. 21N-8E SUB AREA FENWAY-LONGWOOD

DATE 1910 source BUILDING PERMIT



TECT SHEPLEY, RUTAN & COOLIDGE source BLDG. PERMIT

ER NORCROSS BROS. source BLDG. PERMIT

HARVARD UNIVERSITY
original present

GRAPHS FW 6 3/4, 3/5-83

TYPE (residential) single double row 2-fam. 3-deck ten apt.
[✓ non-residential] HOSPITAL

NO. OF STORIES (1st to cornice) 2 plus BASEMENT

ROOF FLAT cupola ______ dormers ______

MATERIALS (Frame) clapboards shingles stucco asphalt asbestos alum/vinyl
[✓ Other] brick [✓ stone MARBLE] concrete iron/steel/alum.

BRIEF DESCRIPTION CLASSICAL REVIVAL BUILDING OF 2 STORIES, HAVING 11-BAY FRONT FACADE DOMINATED BY DOUBLE-STORY TETRASTYLE IONIC PORTICO ATOP BROAD FLIGHT OF STEPS. PILASTERS ARE LOCATED AT EITHER SIDE OF ENTRY BAY, WHICH IS FURTHER DEFINED BY MOLDINGS & CORNICE. DOUBLE DOORS HAVE GRILLE ABOVE. PEDIMENT IS ADORNED BY GRIFFINS FLANKING AN URN, IN TURN FLANKED BY FOLIATE MOTIFS. WINDOWS ARE 1/1 DOUBLE-HUNG SASH, PAIRED BELOW TRANSOMS. SIDE FACADES*

EXTERIOR ALTERATION [✓ minor] moderate drastic

CONDITION [✓ good] fair poor LOT AREA 16,300 sq. feet

NOTEWORTHY SITE CHARACTERISTICS LOCATED IN DENSELY DEVELOPED MEDICAL COMPLEX. LAMPPOSTS LOCATED ATOP LOW BANISTER NEAR BASE OF STEPS. SMALL GRASSY AREA WITH SMALL TREES & LOW HEDGEROW FOUND EITHER SIDE OF STEPS.

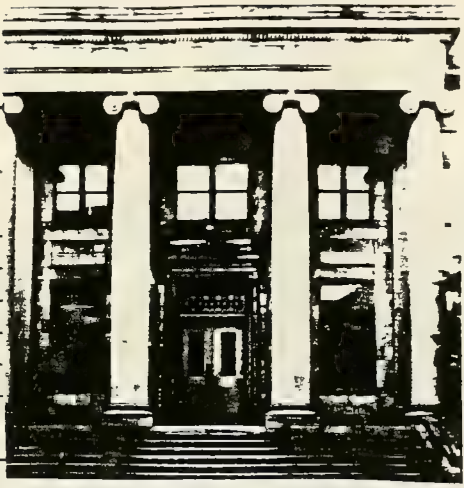
SIGNIFICANCE (~~cont'd~~ on reverse)

* ARE 7 BAYS IN WIDTH, WITH CENTRAL CLASSICALLY EMBELLISHED ENTRY. DOOR ON ~~EAST~~ WEST SIDE IS TO BASEMENT; THAT ON ~~WEST~~ EAST CONTAINS COPPER GRILLE EFFECT WITH ANTHEMION MOTIFS.

(Map)

III. CK. 5/84

Moved; date if known



Themes (check as many

Aboriginal
Agricultural
Architectural ✓
The Arts
Commerce
Communication
Community/ development
Medicine ✓

Recreation
Religion
Science/ invention
Social/ humanitarian ✓
Transportation

Significance (include explanation of themes checked above)

ARCHITECTURALLY DISTINGUISHED EXAMPLE OF CLASSICAL REVIVAL INSTITUTIONAL DESIGN BY BOSTON'S PROMINENT FIRM OF SHEPLEY, RUTAN, AND COOLIDGE, WHO WERE RESPONSIBLE ALSO FOR THE SIMILARLY STYLED HARVARD MEDICAL SCHOOL (SEE FORM). IT WAS BUILT FOR THE THOMAS MORGAN ROTCH, JR. MEMORIAL HOSPITAL FOR INFANTS, WHICH WAS INCORPORATED IN 1881 AS THE WEST-END NURSERY AND INFANTS' HOSPITAL. THE INSTITUTION WAS FOUNDED IN RESPONSE TO THE NEEDS OF THE POOR IN CROWDED TENEMENT HOUSING, WITH THE INTENT OF PROVIDING MEDICAL CARE TO INFANTS AND EDUCATING MOTHERS IN INFANT CARE AND ARTIFICIAL FEEDING. IN EARLY YEARS THE NURSERY AND HOSPITAL WERE ON BLOSSOM ST. (#33, #37).
THE NAME WAS CHANGED IN 1903 TO THE THOMAS MORGAN ROTCH, JR. MEMORIAL HOSPITAL FOR INFANTS. THOMAS M. ROTCH, M.D., WAS AN EARLY DIRECTOR OF THE INSTITUTION AND MEMBER OF THE CORPORATION; IN 1910 HE WAS MEDICAL DIRECTOR.

LAND AT THE SHATTUCK ST. (THEN VAN DYKE ST.) SITE WAS PURCHASED FROM HARVARD UNIVERSITY IN 1904. GROUND WAS BROKEN FOR THE NEW BUILDING IN 1910, BUT IT WAS 1924 WHEN THE HOSPITAL MOVED INTO THE STRUCTURE. PLANS FOR THE BUILDING INCLUDED A RESEARCH LAB, MODEL LAUNDRY, STERILIZING MILK LABORATORY, WARDS, MODEL NURSERY (FOR TEACHING), MILK MODIFYING ROOM, AND LIBRARY (WHICH WAS TO BE OPEN TO THE PUBLIC); LECTURE & OPERATING ROOMS. IN 1924 THE HOSPITAL HAD JOINED *

Preservation Consideration (accessibility, re-use possibilities, capacity for public use and enjoyment, protection, utilities, context)

RECOMMENDED FOR NATIONAL REGISTER ~~DESIGNATION~~ LISTING

* WITH CHILDREN'S HOSPITAL IN ITS BUILDING AT 300 LONGWOOD. 55 SHATTUCK WAS SUBSEQUENTLY TAKEN OVER BY HARVARD UNIVERSITY'S SCHOOL OF PUBLIC HEALTH.

THE ARCHITECTURAL FIRM OF SHEPLEY, RUTAN, AND COOLIDGE WAS ALSO RESPONSIBLE FOR OTHER BUILDINGS IN THE FENWAY AREA. SEE FORMS FOR: YMCA (312-320 HUNTINGTON AVE), HARVARD MEDICAL SCHOOL (230-240 LONGWOOD AVE), AND CHILDREN'S HOSPITAL. (300 LONGWOOD AVE.)

Bibliography and/or references (such as local histories, deeds, assessor's records, early maps, etc.)

BOSTON BUILDING PERMITS, (DECEMBER 12, 1910)

BOSTON DIRECTORIES.

INFANTS' HOSPITAL. ANNUAL REPORTS.

LOWELL, ABBOTT LAWRENCE, & OTHERS. ADDRESSES WHICH WERE DELIVERED AT A MEETING HELD IN BEHALF OF THE NEW BUILDING FOR THE INFANTS' HOSPITAL, BOSTON, MAY 24, 1911.

55 SHATTUCK

F/K 548

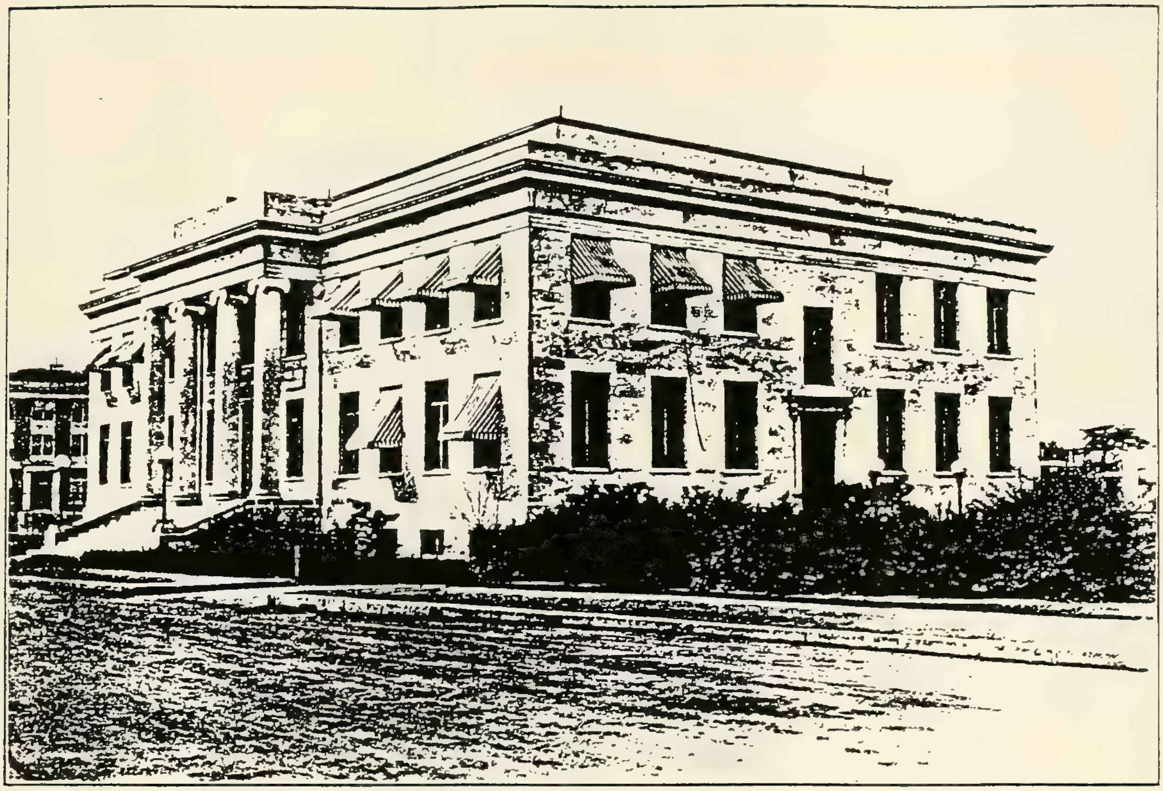
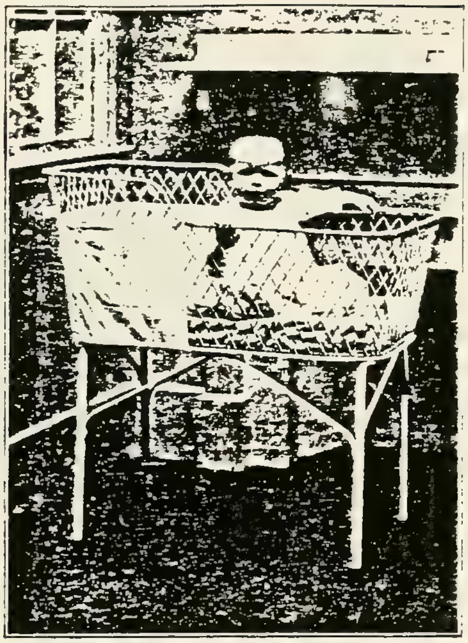
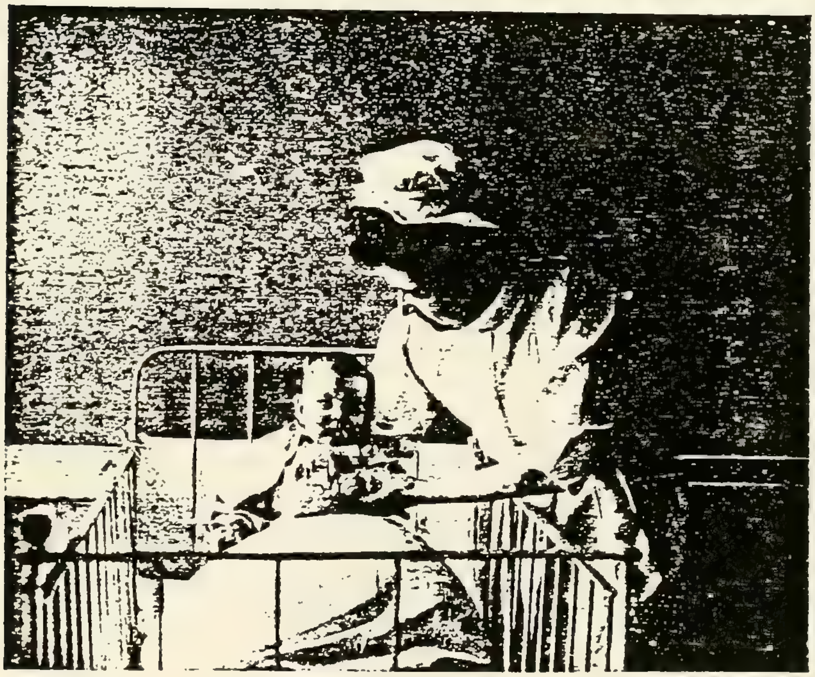


Photo by E. F. Turkington. INFANTS' HOSPITAL, ROTCH MEMORIAL BUILDING.

SPNEA.
(file: Roxbury. Longwood: Children's Hospital (Photo Mechanical Repros)



FROM: INFANTS' HOSPITAL,
28th ANNUAL REPORT
JANUARY 1910-JANUARY 1911



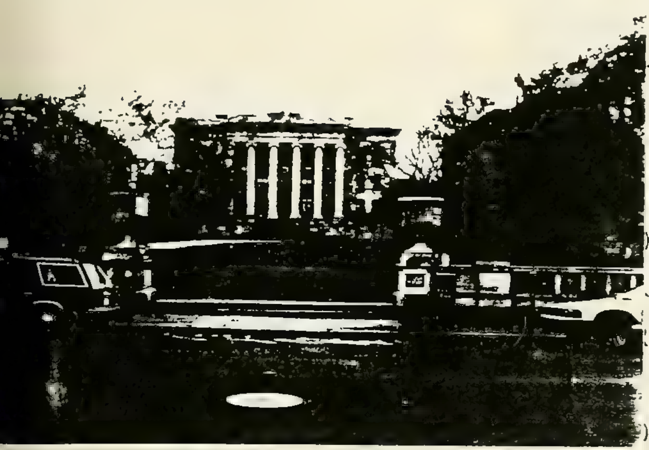
FROM: INFANTS' HOSPITAL
26th ANNUAL REPORT.
JANUARY 1908-1909.

BOSTON LANDMARKS COMMISSION Building Information Form Form No. 518 Area [illegible]

ADDRESS 230 & 240 LONGWOOD COR. ACROSS FROM AVE. LOUIS PASTEUR

NAME HARVARD MEDICAL SCHOOL
present original

MAP No. 21N-8E SUB AREA FENWAY-LONGWOOD



DATE: 1903-1906 American Architect & Building News
source

ARCHITECT: SHEPLEY, RUTAN, AND COOLIDGE American Architect & Building News
source

BUILDER: THE NORCROSS BROS. American Architect & Building News
source

ENGINEERS: Edward D. Dinsmore & Gifford Le Clear } ENGINEERS

OWNER: HARVARD COLLEGE SAME
original present

PHOTOGRAPHS FW 6 4/2, 4/3, 4/4, 4/5, 4/6, 5/1, 5/2, 5/3, 5/4, 5/5 - 83

TYPE (residential) single double row 2-fam. 3-deck ten apt.
[✓ (non-residential)] COLLEGE - CLASSROOM USE

NO. OF STORIES (1st to cornice) 3 (BLDG. A); 2 (BLDGS B,C,D,E) plus BASEMENT

ROOF FLAT cupola dormers

MATERIALS (Frame) clapboards shingles stucco asphalt asbestos alum/vinyl
[✓ (Other)] brick [✓ stone] MARBLE concrete iron/steel/alum.

BRIEF DESCRIPTION MONUMENTALLY SCALED COMPLEX OF CLASSICAL REVIVAL WHITE MARBLE BUILDINGS, SYMMETRICALLY ARRANGED AROUND A CENTRAL COURT PLANTED WITH GRASS AND TREES. BUILDING "A", AT HEAD OF COMPLEX, IS 3-STORIES + BASEMENT, WITH IONIC PORTICOS OF 6 COLUMNS FACING COURT AND FACING SHATTUCK ST. IT HOUSES ADMINISTRATIVE OFFICES. FENESTRATION IS REGULARLY SPACED, 9 BAYS ON PORTICOED FACADES. EACH OF THE FOUR CLASSROOM BUILDINGS (B,C,D,E) HAS "U"-SHAPED PLAN WHICH (see page 2)

EXTERIOR ALTERATION [✓ minor] moderate drastic ADDITIONS: CONCRETE BLOCK AT REAR OF "E"; 2-STORY, BRICK @ REAR OF "D"; GLASS + METAL "MONITOR" STORY ADDED TO "C", and connection to 45 Shattuck St.

CONDITION [✓ good] fair poor LOT AREA 510,552 sq. feet

NOTEWORTHY SITE CHARACTERISTICS THE COMPLEX RETAINS ITS MONUMENTALLY SCALED, LANDSCAPED QUADRANGLE. RAISED MARBLE TERRACE CONNECTS SIDE BUILDINGS WITH ONE ANOTHER. MARBLE BANISTER FURTHER ENCLOSES THE GROUP, ALONG LONGWOOD AVE., FEATURING URNS FLANKING THE CENTRAL OPENING.

(Map)

SIGNIFICANCE (cont'd on reverse)
AN ARCHITECTURALLY DISTINGUISHED AND EXCEPTIONAL GROUP OF CLASSICAL REVIVAL BUILDINGS, A FINE EXAMPLE OF THE WORK OF BOSTON ARCHITECTURAL FIRM SHEPLEY, RUTAN, AND COOLIDGE. THE WHITE MARBLE BUILDINGS PROVIDE AN IMPORTANT URBAN DESIGN ELEMENT IN THE LONGWOOD AREA. THE SCHOOL ITSELF HAS NATIONAL PROMINENCE IN RESEARCH AND MEDICAL EDUCATION, AND ITS MOVE IN 1906 TO THE LONGWOOD AVE. SITE WAS A MAJOR INFLUENCE IN

II. CK. 5/84

Moved; date if known ______

Themes (check as many as applicabl

Aboriginal ______
Agricultural ______
Architectural ✓
The Arts ______
Commerce ______
Communication ______
Community/ development ______
MEDICAL EDUCATION ✓

Conservat
Education
Explorati settlem
Industry
Military
Political

Significance (include explanation of themes checked above)

THE ESTABLISHMENT OF THE LONGWOOD AREA AS HOME TO MANY OF THE CITY'S MEDICAL FACILITIES.

MEDICAL SCHOOL CLASSES WERE FIRST HELD AT HARVARD COLLEGE IN HARVARD HALL AT THE CAMBRIDGE CAMPUS IN 1782, THEN FROM 1783-1810 IN HOLDEN HALL. LECTURES WERE MOVED TO BOSTON IN 1810, USING ROOMS OVER WHITE'S APOTHECARY SHOP ON PRESENT-DAY WASHINGTON ST. THEN IN 1816 THE FIRST BUILDING ERECTED SPECIFICALLY FOR THE MEDICAL SCHOOL'S USE WAS PUT UP ON MASON ST. FROM 1847-1883 THE SCHOOL WAS ON NORTH GROVE ST. NEAR MASS. GENERAL HOSPITAL, AND FROM 1883-1906 ON BOYLSTON ST., BEHIND THE PUBLIC LIBRARY.

PLANNING FOR THE LONGWOOD AVE. CAMPUS WAS UNDERWAY BY 1900 WHEN THE ARCHITECTS (SHEPLEY, RUTAN, & COOLIDGE) WERE FIRST CONSULTED. THE UNIVERSITY HAD ACQUIRED A 26+ ACRE SITE WHICH HAD BEEN PART OF THE EBENEZER FRANCIS ESTATE. SIGNIFICANT CONTRIBUTIONS TOWARD THE NEW BUILDINGS WERE MADE BY J. PIERPONT MORGAN, JOHN D. ROCKEFELLER, JR., AND MRS. COLLIS P. HUNTINGTON.

GREAT CARE WAS TAKEN IN THE DESIGN OF THE BUILDINGS TO ADEQUATELY SERVE THE SCHOOL FOR A LONG PERIOD TO COME. THE LABORATORY BUILDINGS (B-E) WERE DESIGNED WITH TWO LABORATORY WINGS JOINED BY A LECTURE ROOM FOR EACH BUILDING (B= ANATOMY & HISTOLOGY; C= PHYSIOLOGICAL CHEMISTRY & PHYSIOLOGY; D= BACTERIOLOGY & PATHOLOGY; E= PHARMACOLOGY & HYGIENE). ADEQUATE LIGHTING WAS A PARTICULAR CONCERN, AND DISTANCES BETWEEN THE BUILDINGS WERE DESIGNED TO ALLOW SUN IN WINTER TO REACH THE

Preservation Consideration (accessibility, re-use possibilities, capacity for public use and enjoyment, protection, utilities, context)

RECOMMENDED FOR NATIONAL REGISTER AND BOSTON LANDMARK DISTRICT.

Bibliography and/or references (such as local histories, deeds, assessor's records, early maps, etc.)

AMERICAN ARCHITECT AND BUILDING NEWS. Volume 92, No. 1669; December 21, 1907

DEDICATION OF THE NEW BUILDINGS OF THE HARVARD MEDICAL SCHOOL. SEPT. 25 & 26, 1906. Boston. Published by the Faculty of Medicine.

HARVARD MEDICAL SCHOOL. BICENTENNIAL 1782-1982. DEAN'S REPORT.

Beecher, Henry K., M.D. & Mark D. Altschule, M.D. MEDICINE AT HARVARD. THE FIRST 300 YEARS. The Univ. Press of New England. Hanover, N.H. 1977.

Harrington, Thomas Francis, M.D. THE HARVARD MEDICAL SCHOOL. VOL. III. N.Y., Chicago. The Lewis Publishing Co. 1905.

AESCULAPIAN BOSTON. Section on Harvard Medical School by Leslie A. Venset.

DESCRIPTION CONTINED:

HAS A FENESTRATION PATTERN OF 5 BAYS FLANKED ON EITHER SIDE BY 3 BAYS AT THE BASE OF THE "U" (FACING THE QUADRANGLE). SIDE WALLS ARE REGULARLY SPACED: 13 BAYS (BUILDING "B"); 11 BAYS (BLDGS. "C" & "D"), AND 9 BAYS (BLDG. "E"). THESE BUILDINGS ARE QUITE RESTRAINED, THEIR IMPACT ACHIEVED BY CONTRIBUTION TO THE ENTIRE FORMAL COMPLEX. THE VISUAL SIGNIFICANCE OF "B"–"E" IS SECONDARY TO "A".

SIGNIFICANCE CONTINUED:

BASEMENT WINDOWS. THE ENTIRE COMPLEX OF BUILDINGS INTERCONNECTS BY A CORRIDOR.

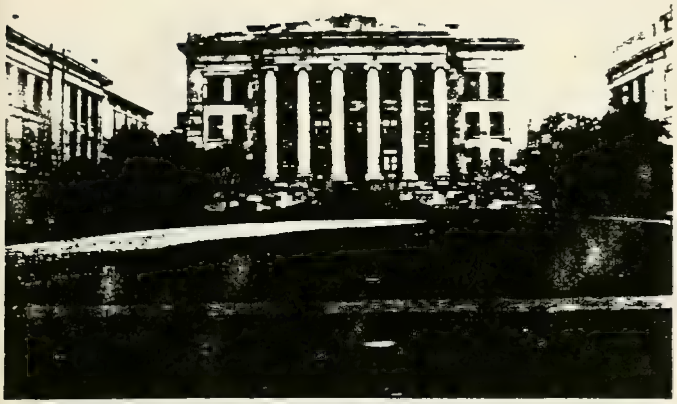
IN 1903, CONSTRUCTION CONTRACTS WERE LET TO THE NORCROSS BROS. CO. DEDICATION CEREMONIES FOR THE NEW BUILDINGS WERE HELD ON THE TERRACES AND LAWN ON SEPTEMBER 25 & 26, 1906. AT THE TIME, AN HONORARY DR. OF ARTS DEGREE WAS AWARDED TO "CHARLES ALLERTON COOLIDGE, ARCHITECT,... DESIGNER OF THE MONUMENTAL NEW BUILDINGS OF THE HARVARD MEDICAL SCHOOL, BUILDINGS IN WHICH ARE COMBINED SPACIOUSNESS, SPLENDOR OF MATERIAL, FINE GROUPING, DURABILITY AND CAREFUL ADAPTATION TO THEIR SPECIAL USES; THROUGH PROFESSIONAL SKILL AND PATIENCE AN INFLUENTIAL PROMOTER OF THE PURPOSES & WISHES OF THE MEDICAL FACULTY..." [FROM TEXT OF DEDICATION].

THE RELATIVELY RURAL ISOLATION OF THE NEW LOCATION WAS PROBLEMATIC UNTIL COMPLETION OF THE PETER BENT BRIGHAM HOSPITAL AFFORDED CLINICAL TEACHING OPPORTUNITIES IN 1913 (SEE INVENTORY FORM, 721 HUNTINGTON AVE.).

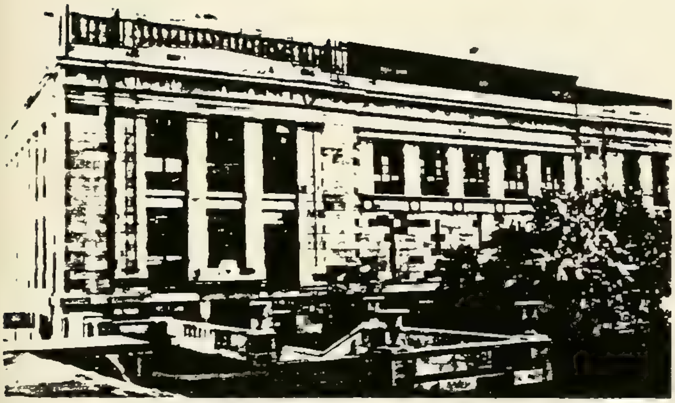
THE ARCHITECTURAL FIRM OF SHEPLEY, RUTAN, AND COOLIDGE WAS ALSO RESPONSIBLE FOR THESE OTHER BUILDINGS IN THE FENWAY AREA: YMCA (312-320 HUNTINGTON AVE), INFANTS' HOSPITAL (55 SHATTUCK), CHILDREN'S HOSPITAL (300 LONGWOOD AVE).

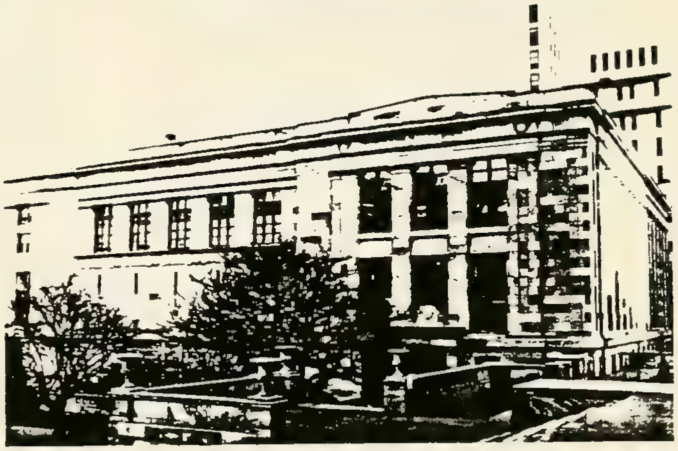
230 & 240 LONGWOOD AVE.
HARVARD MEDICAL SCHOOL
PAGE 3

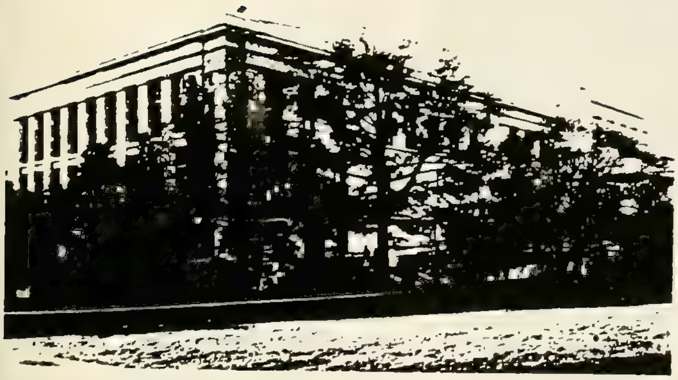
F/K 528

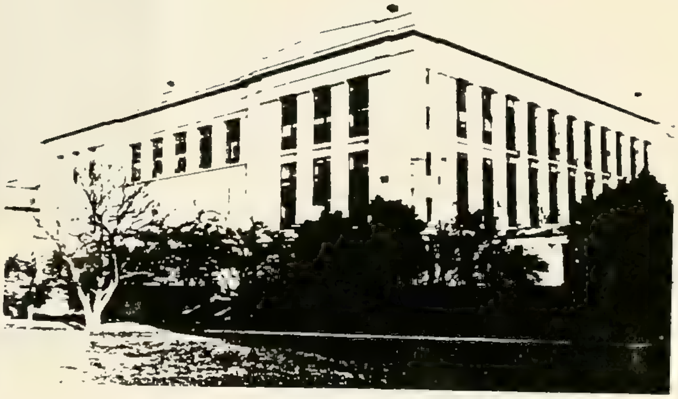

B BUILDING A C
VIEW FROM QUADRANGLE

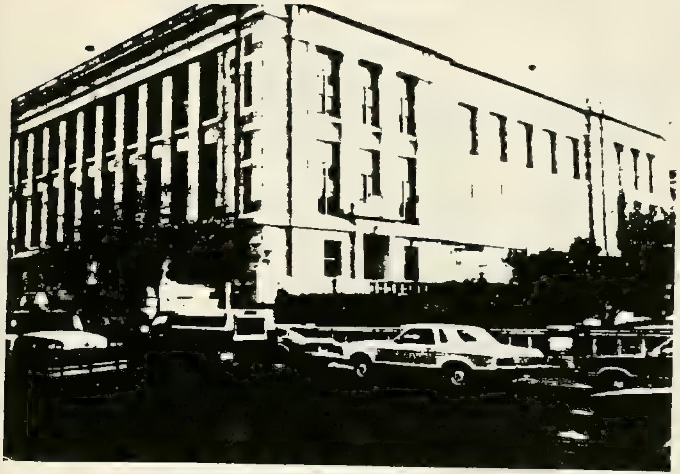
QUADRANGLE; VIEW FROM BUILDING "A" PORTICO TOWARD LONGWOOD AVE.


BUILDING C

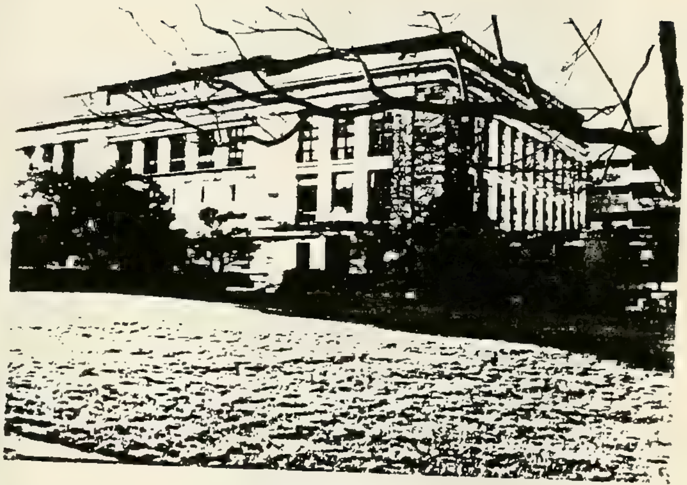

BUILDING B


BUILDING E

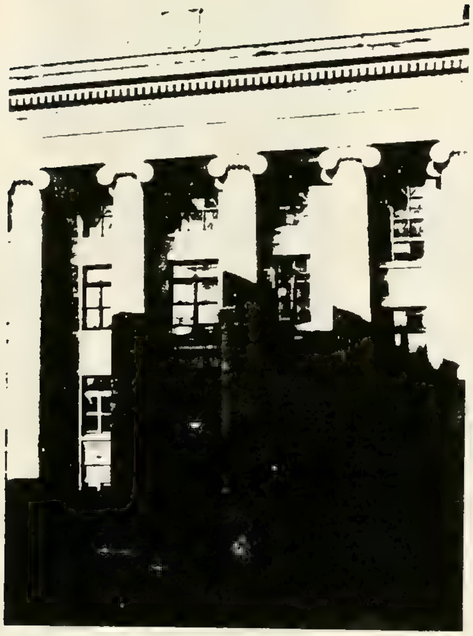

BUILDING D



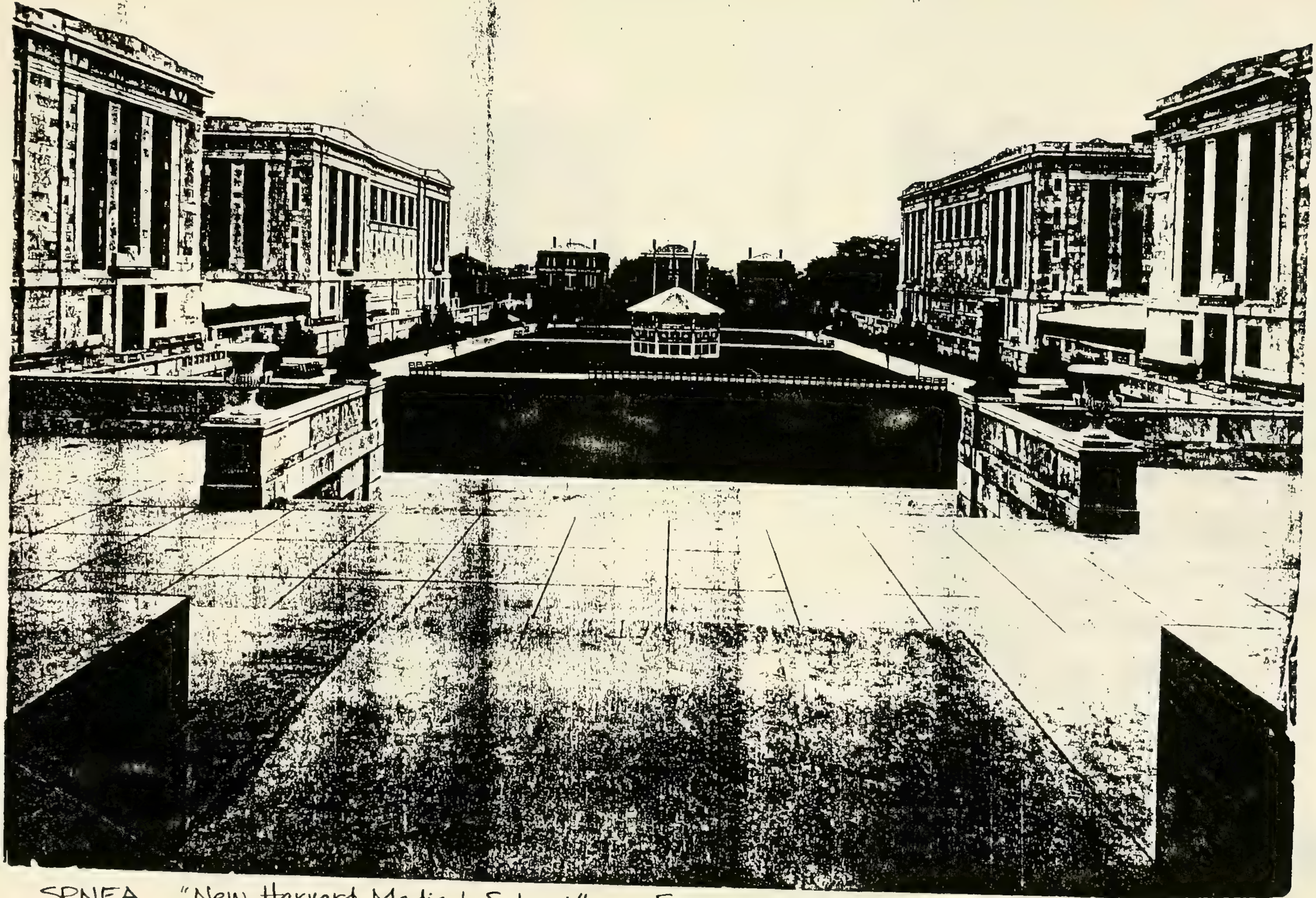
BUILDING "D"
FROM LONGWOOD AVE.



BUILDING "E"
FROM QUADRANGLE, NEAR LONGWOOD AVE.



BUILDING "A"
SHATTUCK ST. FACADE

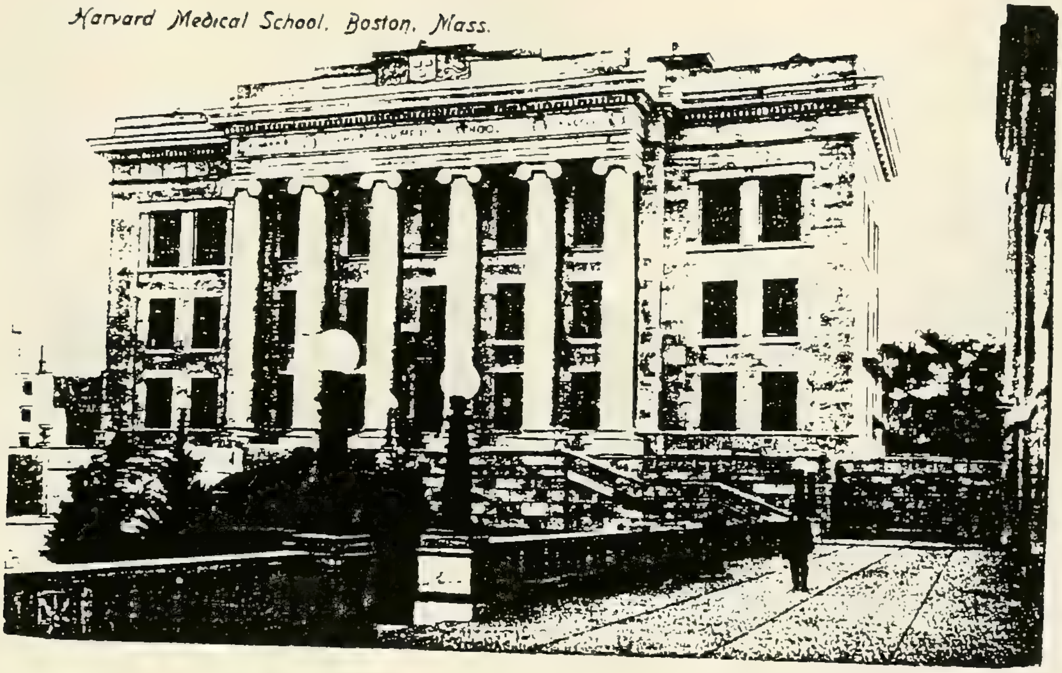


SPNEA. "New Harvard Medical School"
George Brayton, Boston.
Copy neg. # 11829-B

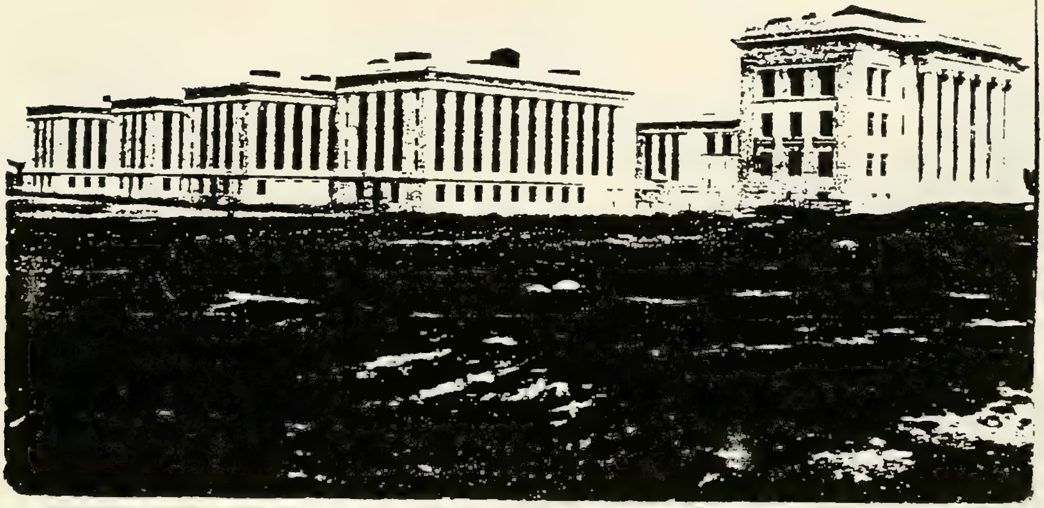
[From file: Longwood Ave. unmounted]

F/K 528

Harvard Medical School, Boston, Mass.

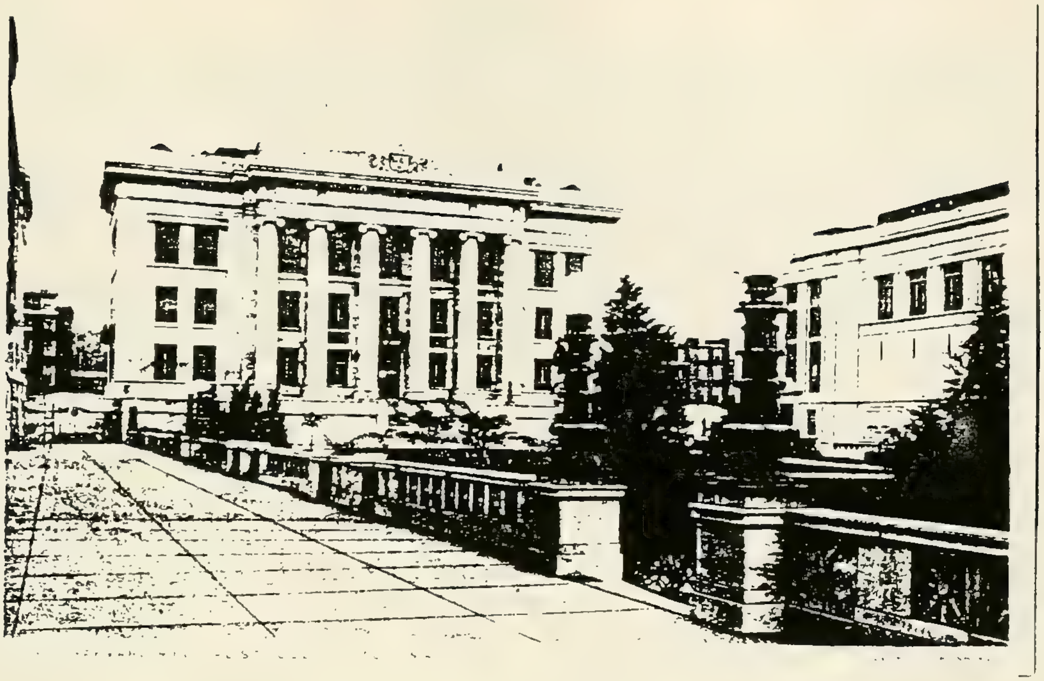


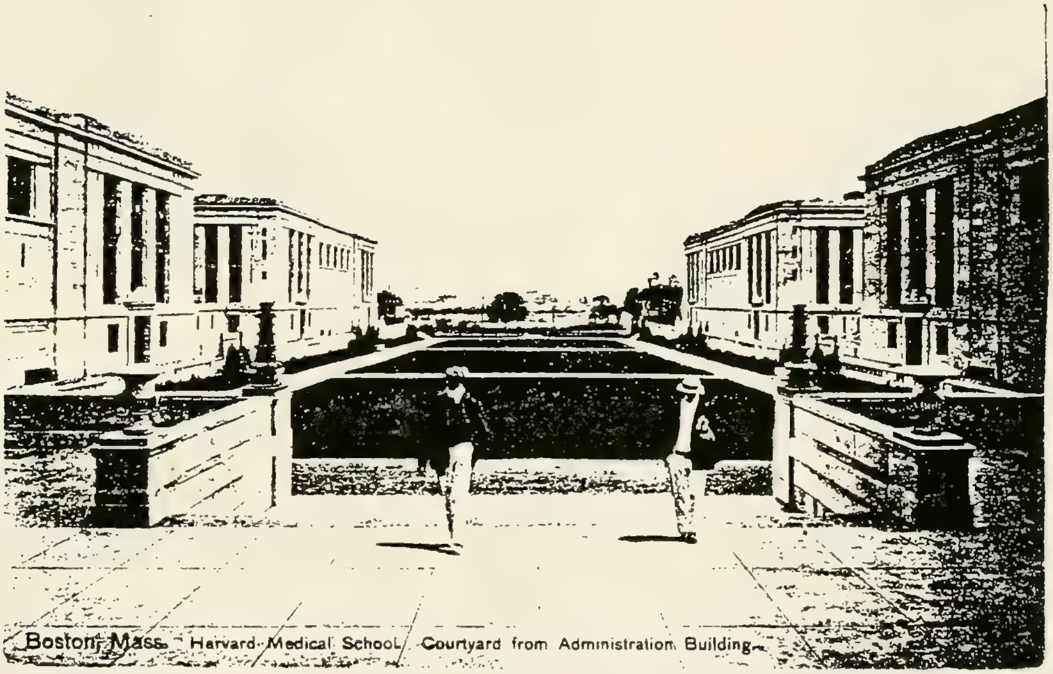
Harvard Medical School, ~~Cambridge,~~ Mass. Boston



SPNEA. Postcard collection

F/K 528





Boston, Mass. Harvard Medical School. Courtyard from Administration Building.

SPNEA. Postcard collection.

F/K 528

The New Harvard Medical School Buildings, Boston, Mass.

FOR the elaborate memorial history of the Harvard Medical School published at the time the new buildings were dedicated early in 1906, the architects prepared the following description which we are allowed to reproduce in full:

In August of 1900 Drs. Henry P. Bowditch and J. Collins Warren called at the office of Shepley, Rutan & Coolidge, and informed them that they were authorized by the Corporation of Harvard College to consult with them and have sketch plans drawn for the Administration and Laboratory and Research Buildings which they considered necessary for a new Medical School; these buildings to embody the most modern methods of teaching and research work. They stated that through the kindness of certain gentlemen who were interested in the welfare of the University a piece of land formerly belonging to the Francis estate had been acquired. This lot of land is situated in Boston, and contains a little over twenty-six acres bounded by Francis Street, Huntington Avenue, Longwood Avenue, and extending beyond Vila Street in a westerly direction.

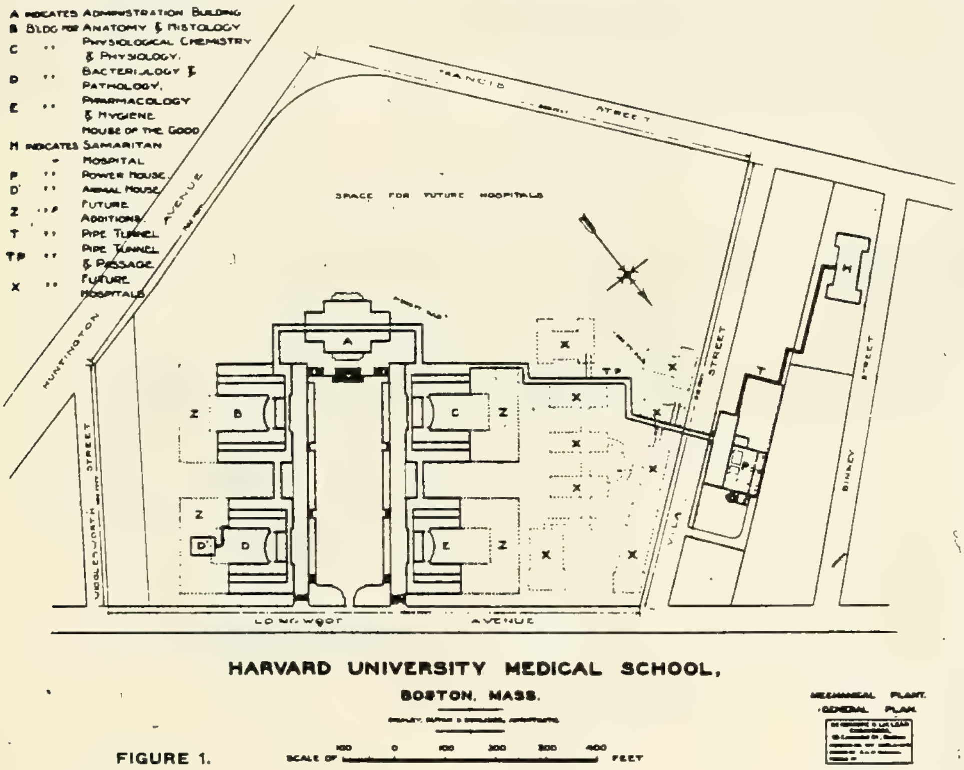

A indicates Administration Building
B Bldg for Anatomy & Histology
C " Physiological Chemistry & Physiology.
D " Bacteriology & Pathology.
E " Pharmacology & Hygiene
H indicates House of the Good Samaritan Hospital
P " Power House.
D' " Animal House.
Z " Future Additions.
T " Pipe Tunnel
TP " Pipe Tunnel & Passage.
X " Future Hospitals
Space for future hospitals
Francis Street
Huntington Avenue
Longwood Avenue
Vila Street
Binney Street
Street
A
B
C
D
D'
E
H
P
T
TP
Z
X
HARVARD UNIVERSITY MEDICAL SCHOOL,
BOSTON, MASS.
Scale of 100 0 100 200 300 400 Feet
Mechanical Plant.
General Plan.

FIGURE 1.

After many consultations it was decided that the highest portion of the land, which is at the junction of Huntington Avenue and Francis Street extending along the latter, should be reserved as a site for a general hospital, and that that portion towards the west, which was not needed for the Medical School buildings and their enlargement in the future, should also be reserved for hospital purposes.

The land where it was proposed to locate the Medical School falls about twelve feet from that reserved for the general hospital, so that the problem presented was quite difficult to solve, as one of the first requirements in the new buildings was to have communication between all the buildings by a corridor which should be level.

Several different schemes for the arrangement of the laboratories and Administration Building were drawn up, one being to place all the rooms which are now in five buildings in two high buildings. This scheme was very carefully considered and the advantages and disadvantages weighed against the plan finally adopted.

Although the two-building scheme is slightly cheaper in the original cost, yet it requires elevator-service for the students, which is not the case in the present buildings. It also prevented the laboratories and the instructors' rooms connected with them being segregated as they are in the present scheme.

Where microscopes are used, and a large number of students are to be in one room, it will readily be seen that the room must of necessity be much higher than an ordinary research-room where only one individual is at work, and to group these successfully in the scheme where only two large buildings were used was found to be a very much more difficult matter than in the present arrangement.

At the same time that these various ideas were being discussed, the heads of the different departments were being consulted in regard to the amount of space and arrangements in detail, and before either scheme was decided upon definitely each department had gone into all the details which were deemed necessary in the buildings to make them complete.

At this time Dr. Farrar Cobb was associated with the architects and was of great assistance in advising and in formulating and compiling the mass of information and requirements which had been obtained.

In most of the buildings which have been designed for our American universities sufficient attention has not been paid to the future and the possibility that, as the system of teaching may change, the building should be so designed and constructed that it can be adapted to these future ideas and needs. In both the schemes which were worked out the future growth of the buildings was considered and arranged for, in that the wings may be extended to a sufficient depth to form a court in which the light will penetrate to the rooms surrounding it and that these two wings may be connected together at the far end by an additional parallel with the front. Here again the plan adopted shows its superiority over that of a high building, as the light on the entrance floor in the latter is impeded by the height of the wings.

As soon as the general form and arrangement of the buildings were decided upon, sketch plans and sketches were prepared and pen-and-ink drawings, from which reproductions were made and given to Dr. Bowditch and Dr. Warren, and to their untiring efforts the completion of the new Medical School buildings is due.

While this was going on drawings were made in detail and turned over to the heads of the departments for their criticism and revision, and changes were made until each one had expressed himself as satisfied, after which a complete set of working-drawings were made which were gone over very carefully by President Eliot and Drs. Walcott and Cabot, who represented the Corporation. These were approved by them, and bids were taken.

Before the contract was signed, the Norcross Bros. Co. offered to substitute marble from their quarries in Dorset, Vt., without change from the contract price, and this was accepted by the

Corporation and the architects The contract was let to the Norcross Bros. Co on August 12, 1003, and work was at once begun

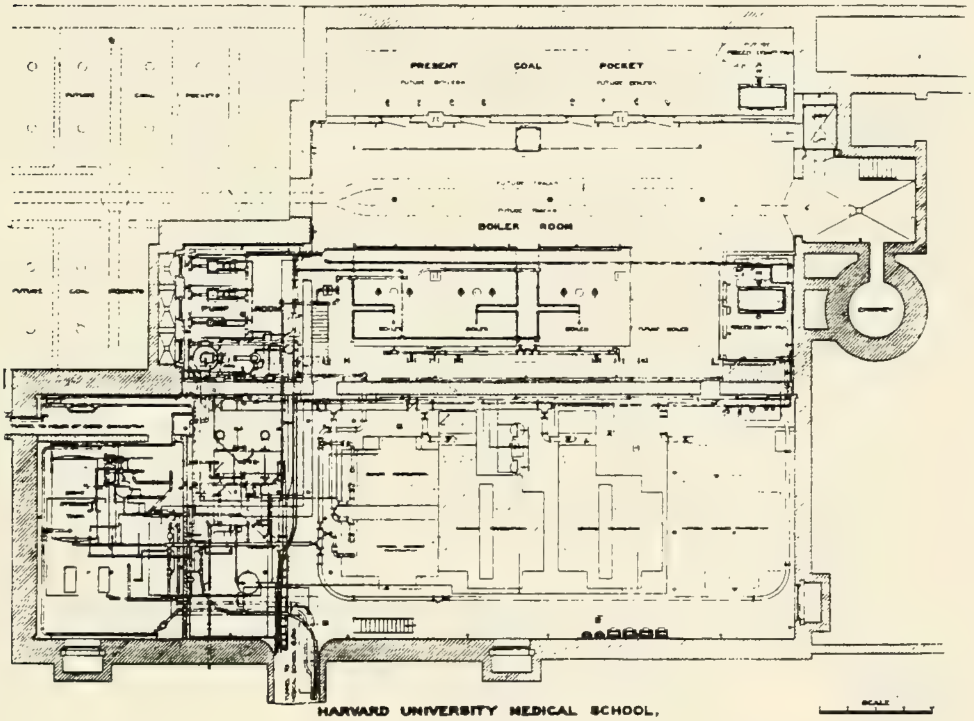
The final lay-out of the buildings as shown in the perfected plan is based largely on what is known as the unit system, but differs from other unit-systems in this fact: that all previous unit systems duplicated each section teaching room, six of twenty four feet square as a unit, and the new Medical School takes a unit of ten feet, which is a window and half a pier space on each side of the window as a unit. These ten foot units are used for a single research-room, but as the walls of the building which are permanent are only the outside walls and those along the corridors, it permits the intermediate walls, which form the two sides of the room, to be taken out at any time and new rooms formed which may be ten, twenty, thirty, or any multiple of ten feet in length as may be required in the future.

The general section teaching-room throughout the buildings, except that for pathology and bacteriology, is a room which will accommodate twenty-four students with the apparatus and tables which are necessary in their work This, at the present time, seems to be the most economical number for one instructor to have under him in many of the departments Such a room consists of three units of ten feet. All of the buildings except the Administration Building, which is in the center and raised above the laboratory buildings by a terrace which takes up the difference in level of the ground from the south side of the buildings to Longwood Avenue, consist of two laboratory wings joined together by a lecture-room which is entered at either end, with the libraries of the affiliated departments over it These lecture-rooms can be used by the men in one laboratory without disturbing those in the other, as the doors by which they are entered are on opposite sides The lecturer's desk is on the ground floor level and adjoining are two preparation-rooms, one on each side while the students enter from the main floor

The plan finally adopted consists of five buildings with their fronts grouped around a quadrangle two hundred and fifteen by five hundred and fourteen feet, with the Administration Building in the center of the south end of the quadrangle The corridor which connects them all, passes through the basement of the Administration Building, but is on the ground floor of the others and is carried under the Administration Building terrace Between the laboratory buildings the corridor is one story above the ground, with only the pipe-tunnel under it

The accompanying plans will explain more clearly than any verbal description

One of the advantages of the present arrangement is that the front on the quadrangle is a completed façade and allows additions to be made to the different laboratories, as time may require, without disturbing the architectural effect of the quadrangle.



HARVARD UNIVERSITY MEDICAL SCHOOL,
BOSTON, MASS.
BASEMENT PLAN OF POWER HOUSE.

FIGURE 2.

In designing the buildings, the architects chose a style which permitted great simplicity, and they relied on the relation of the masses to produce the effect rather than upon any elaboration of detail The style is an adaptation of the original Greek The doorways of the laboratories are similar to those discovered in Assos by the American expedition

The distance between the buildings and the wings was determined by actual experiments on the site, and the buildings were placed far enough apart to allow the sun in winter to reach the basement windows

In every case special attention was given to light The windows in the teaching laboratories go to the ceiling and are high enough to allow the use of microscopes in the rear desks

The large central building of the group is the Administration Building, which contains, on the first floor, the Faculty-room

F/K 528

and adjoining it the offices of the Dean and Secretary, the telephone exchange, janitor's-room, a large reading-room for the students with a smoking-room connected with it, and a room for the alumni.

On the second floor on the east side is an amphitheater for lectures on surgery, and on the west side a large room for medicine, obstetrics, theory and practice of medicine, and other subjects. There are also two smaller lecture rooms at the head of the staircase.

The Warren Anatomical Museum occupies the whole of the three upper floors, and is lighted by skylights, glass floors between the cases as well as windows in every alcove, and is connected with the unpacking-room in the basement by a large elevator. There are also rooms for the curator of the museum on the third floor.

In the basement are the rooms for x-ray photography and instruction in bandaging. There are also locker rooms and lavatories for the students.

To one standing in the court facing the Administration Building, on the left, next the Administration Building is that for anatomy and histology. It contains also the departments of Operative Surgery and Comparative Anatomy. The Anatomical Department occupies the south wing and Histology and Comparative Anatomy the north wing.

The building opposite anatomy to the right of the Administration Building is devoted to physiology and physiological chemistry, physiology being in the south wing. Besides the section teaching-rooms there are rooms for research-work, an operating room for animals and sets of rooms for animals under observation, which have been arranged with especial care. There are also animal houses on the roof especially ventilated and arranged with yards for exercise in the open air.

The laboratories for physiological chemistry are fitted with all the most modern conveniences, and also have rooms devoted to special research-work by individuals.

The library in this building differs from the others in that the books are arranged in stacks instead of wall-cases.

This and the two preceding buildings were provided by Mr. J. P. Morgan.

Next to the Anatomy Building on the same side, and on Longwood Avenue, is the C. P. Huntington Building for pathology and bacteriology. This differs from the others in that the teaching laboratories take up one wing, and the professors', instructors', and research-rooms occupy the whole of the other or south wing.

The teaching laboratories, of which there are four, are twenty feet high, and this height allows two ten-foot stories on the research side for each teaching laboratory, so that the building in the teaching wing is, including the entrance floor, three stories, and on the research side five stories high.

The teaching laboratories each have a capacity of forty-eight students. Besides the research rooms in the south wing there are rooms devoted to gross photography, also photomicrography and ultra violet photomicrography; four rooms are also devoted to surgical pathology.

In the rear of the building is a separate structure for the housing of animals. Besides the smaller animals it is arranged for large ones, such as cows.

On the opposite side of the quadrangle from pathology and bacteriology is the David Sears Building, devoted to hygiene, pharmacology, therapeutics, and comparative pathology and surgical research. Pharmacology and therapeutics occupy the south wing with space on the third floor for surgical research. The north wing has on the front the Department of Hygiene, which, besides its teaching laboratories, has a museum for exhibiting foods and appliances relating to public health.

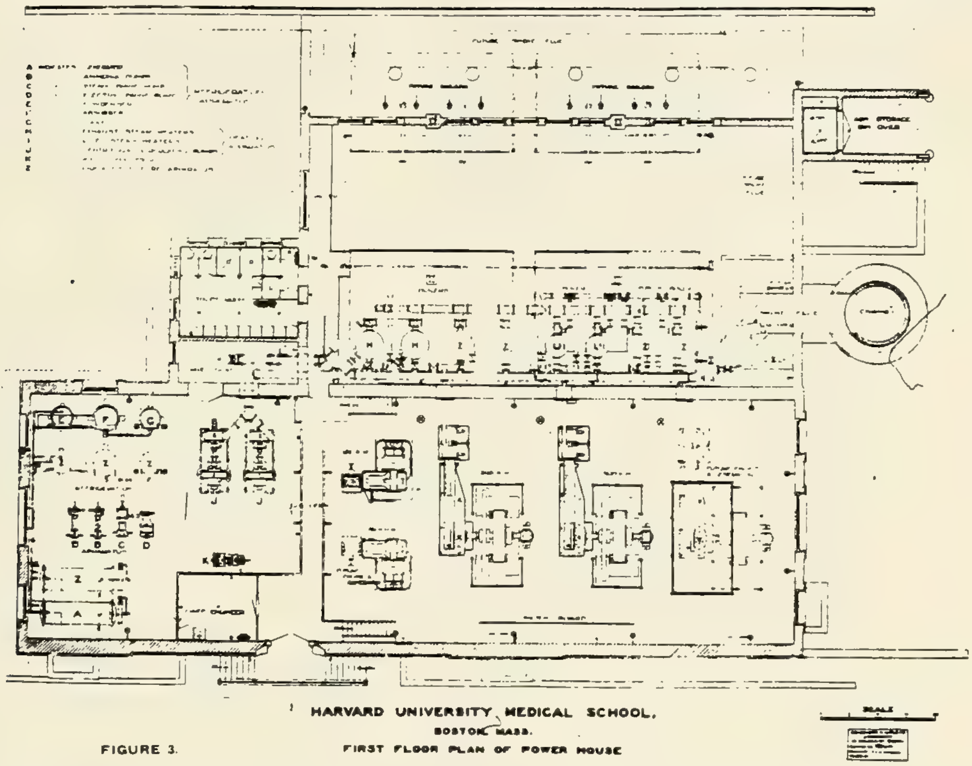


FIGURE 3. HARVARD UNIVERSITY MEDICAL SCHOOL, BOSTON, MASS. FIRST FLOOR PLAN OF POWER HOUSE

The Department of Comparative Pathology occupies the rear half of this wing on all floors. It has on the two lower floors laboratories for students and professors, a room for autopsies and small rooms to be used in connection with the laboratories. The upper floors are devoted to research and original work. On the top floor are animal rooms with an operating room adjoining.

All the amphitheaters have two preparation-rooms, one on either side, and automatic screens for shutting out the light, worked by a button at the desk. Special platforms for the lanterns are so arranged that there will be no distortion in the image thrown upon the wall.

The heating, ventilating, lighting, refrigerating and power plants were worked out by Messrs. Densmore & LeClear in conjunction with the architects, and the general scheme is as follows:

The central walls on either side of the corridors in all the buildings are hollow and contain all the heating and ventilating flues. The system used is indirect hot-water. The hot, fresh air is forced by fans from a plenum in the basement into the upper part of the rooms and exhaust-fans pull out the foul air from the lower level. In the chemical laboratories the foul air goes out through the hoods as well as the exhaust-ducts. Sufficient direct radiation, however, is installed to keep the buildings moderately heated during the night and Sundays when the fans are not running. Below the corridor, which gives communication between all the buildings, there is a tunnel which connects with the power-house on Vila Street. In this tunnel are carried the hot-water pipes for the heating, hot water for the hot-water service in all the buildings, gas and steam-pipes, electric conduits, brine for the refrigeration and all other necessary pipes. This tunnel is large enough for men to work in freely. In the power-house are installed all the necessary appliances for heating, lighting, refrigerating, and power. It is also intended to supply the different hospitals from this same station.

It is proposed to eventually close the end of the main quadrangle on Longwood Avenue with an iron fence and gates of a monumental character, one at the entrance of the terraces on either side and a large gate in the center of the quadrangle. This fence and gates, it is hoped, will be contributed by the classes of the Medical School on their graduation.

A boulevard one hundred feet wide will be constructed on the north and south axis of the quadrangle connecting the Medical School buildings with the Fenway. This will be planted with elms on either side.

At the junction of Longwood Avenue and the Boulevard there will be a plaza starting on the line of the buildings in the quadrangle and sweeping in the arc of a circle until it intersects the boulevard. Thus the buildings will have a suitable and dignified approach.

The Mechanical Plant, Harvard University Medical Schools.

THE following description of certain parts of the mechanical equipment at the Harvard University Medical Schools is abstracted from a report of the engineers, Messrs. Edward D. Dinsmore and Gifford LeClear. We are indebted to the *Harvard Graduates' Magazine* for the various plans and sections which accompany the article:

It is the purpose of this article to describe those features of the mechanical plant which may be of general interest, or which are peculiar to this plant, omitting technical details. No attempt is made to present reasons for the selection of the systems used, or to indicate the relative advantages of these systems as compared with other systems. These matters were taken up in detail in a report prepared by the engineers and presented to the Corporation of Harvard College before the preparation of contract drawings and specifications was begun. The entire plant, both as regards details of equipment, and as regards extensions for the future, is in accordance with a carefully prepared plan. An important consideration in the design of the mechanical plant was the provision for a large but somewhat indefinite increase in the size of the plant for possible future hospitals or other buildings associated with the school and for the enlargement of the school buildings.

The plan of the Medical School grounds, Figure 1, shows the five school buildings, and the possible additions to them, the power house, the tunnel between the school buildings and the power house, the house of the Good Samaritan Hospital, with its connecting tunnel, and the space reserved for future hospitals. It has been found convenient to designate the five buildings of the school by letters, the Administration Building is known as "Building A," and the four laboratory buildings as "Buildings B, C, D, and E". Building B is for Histology and Anatomy, Building C for Physiology and Physiological Chemistry, Building D for Bacteriology and Pathology, and Building E for Hygiene and Pharmacology.

POWER HOUSE AND EQUIPMENT

The power house is located on the north side of Vila Street, a good location for this and other service buildings. The main lot is thus left free for future development, and the objectionable features of a power house removed as far as possible from the Medical School buildings and hospitals.

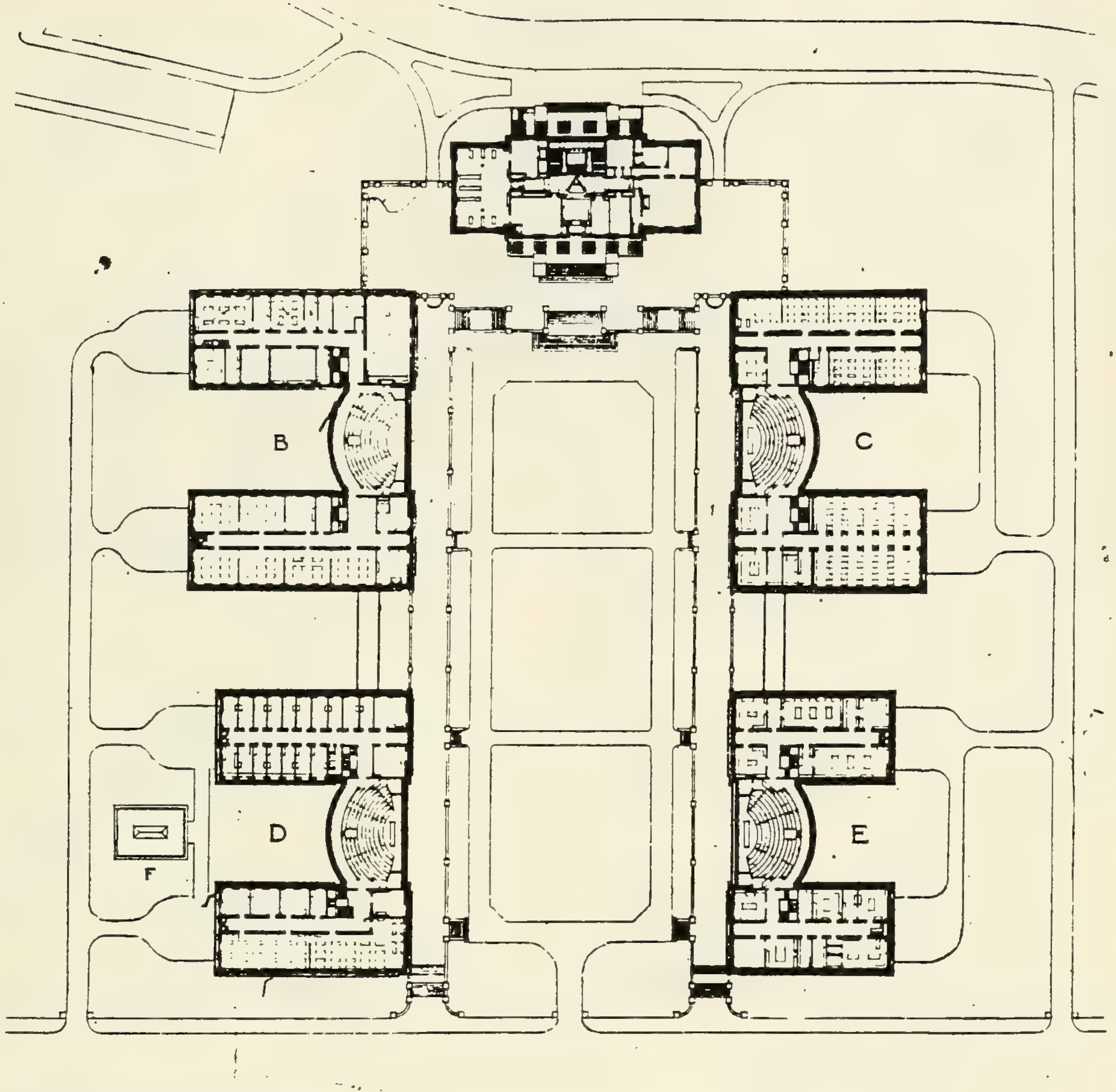
Figures 2 and 3 show the basement plan and first-floor plan of the power house, and Figures 5 and 6 a cross section of the power house, and a section through the Medical School grounds. The boiler-room is located at the rear of the power house, so that the noise and dirt due to the handling of coal and ashes may be on the side away from future hospitals. The brick fence at the front of the power house screens the approach to the coal-pocket and ash-bin, and incloses a yard which can be used for storage. The coal-pocket is so located that coal can be dumped directly into it from teams driven over it. A bin for the temporary storage of ashes is located above the ground level so that a wagon can be backed under it to receive the ashes. The ashes are carried up to the bin on a hydraulic lift. The engine-room, which takes up the entire front of the building, is lighted from skylights and from windows at the end. There are no windows in the front wall, which is the side facing the location for future hospitals. The chimney is high enough (175 feet) to carry away the gases and dust and prevent their being blown down into the windows of the hospitals or of the school buildings. The relative heights of the buildings and chimney are shown on the section of the grounds, Figure 6. Special care has been taken in the design of the plant to prevent smoke; in this connection a fan for running the boilers under forced draught is installed so that a cheap grade of hard coal, either alone or mixed with soft coal, can be burned. The floor plans, Figures 2 and 3, show, not merely the present equipment, but possible future equipment, present machinery being indicated by full lines and future machinery by dotted lines. Additional boiler capacity can be obtained by the addition of one boiler by the side of those already installed, and also by a complete additional battery of boilers, facing the present battery, and occupying the space now utilized as a coal-pocket. A permanent coal-pocket could be built at one end of the boiler-room, where there is opportunity to obtain ample coal storage. The permanent coal-pocket, made up of a number of small pockets to reduce the danger of spontaneous combustion, is indicated on the basement plan, Figure 2. Space has been left in the engine-room for additional engine and generator capacity and for a duplication of the refrigeration apparatus. All of the piping is designed for future connection to additional apparatus. The gallery, which crosses the engine-room and the boiler-room, is on a level with the chief engineer's room and with the entrance. By means of it the chief engineer can reach any part of the power house quickly, and from it he can see all the machinery, both in the engine-room and in the boiler-room. It also serves as a visitors' gallery, from which a view of the power house equipment can be obtained without trespassing on the engine-room or the boiler-room floor.

TUNNELS, PIPE-PASSAGES, AND SUB-BASEMENT

The sub-basements of the four laboratory buildings are connected by passages, located under corridors which connect the ground floors of the buildings. The passage which connects the sub-basements of Building B and Building C runs under the Administration Building, which has no sub-basement. A tunnel connects the sub-basements with the power house, running from one end of Building C, as is indicated in Figure 1. The relative grades of the tunnel, sub-basements and building floors are indicated in Figure 6. The sub-basements are partially excavated as required for heating and ventilating apparatus, electrical switchboards, gas metres and piping, plumbing pipes, etc. The heating mains, electrical cables, brine mains, etc., are run through them and through the connecting passages and the tunnel, special care having been taken in planning their installation to avoid obstructing the passages, and to so arrange them that they can be easily inspected and repaired. A typical cross section and a

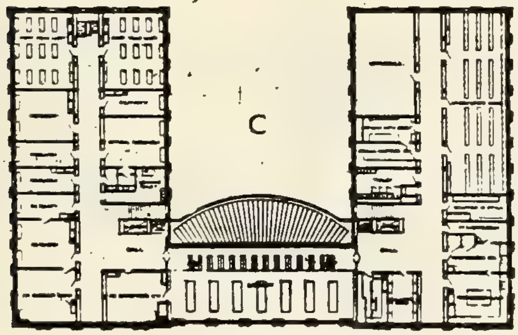
Volume XCII., Number 1669.
December 21, 1907.

F/K 528

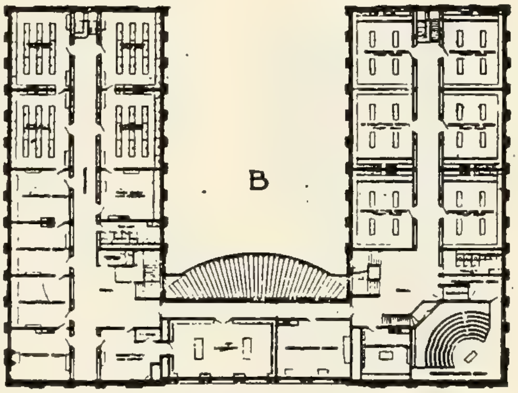


A - ADMINISTRATION BUILDING
B - ANATOMY AND HISTOLOGY BUILDING
C - PHYSIOLOGY AND PHYSIOLOGICAL CHEMISTRY BUILDING
D - BACTERIOLOGY AND PATHOLOGY BUILDING
E - HYGIENE AND PHARMACOLOGY BUILDING
F - ANIMAL HOUSE

PLAN OF FIRST FLOORS



PHYSIOLOGY AND PHYSIOLOGICAL CHEMISTRY BUILDING
SECOND FLOOR PLAN



HISTOLOGY AND ANATOMY BUILDING
SECOND FLOOR PLAN

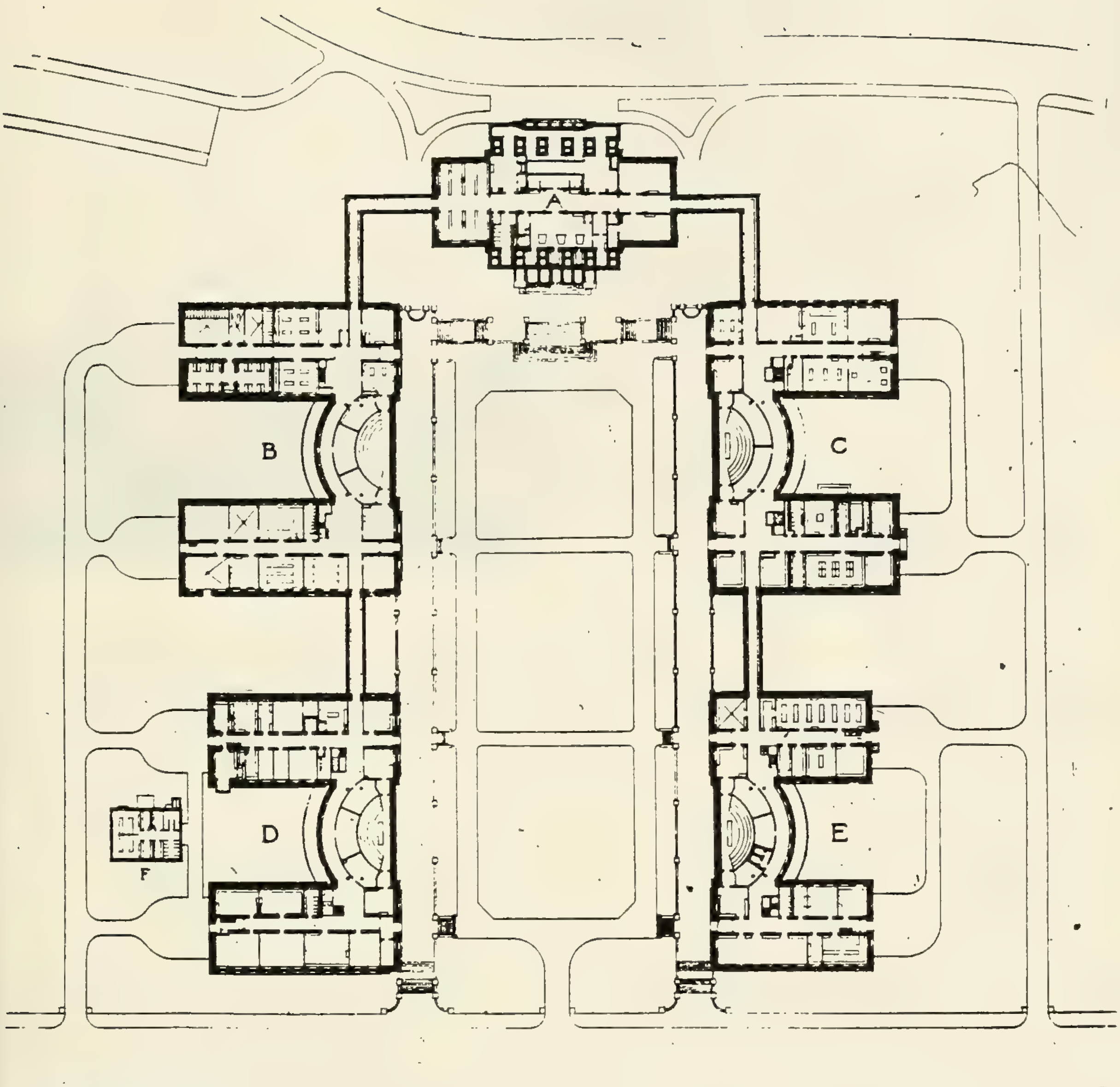
FLOOR PLANS: HARVARD UNIVERSITY MEDICAL SCHOOL BUILDINGS, BOSTON, MASS

Messrs. Shepley, Rutan & Coolidge, Architects

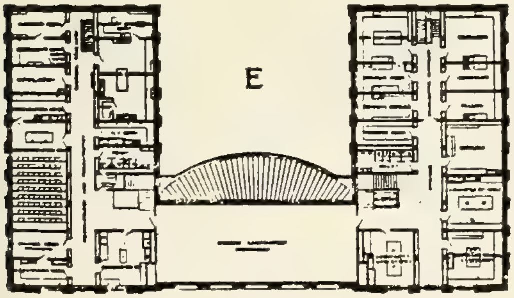
The American Architect and Building News
Regular Edition

Volume XCII., Number 1669
December 21, 1907.

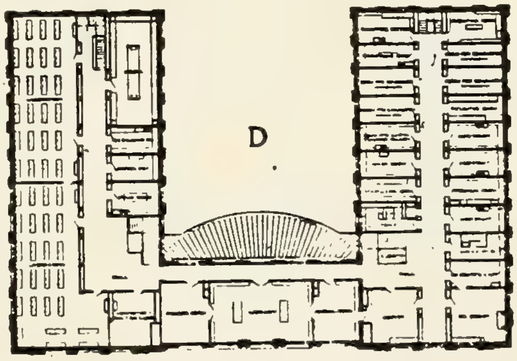
Copyright, 1907, by the Swetland Publishing Co.


A
B
C
D
E
F
A - ADMINISTRATION BUILDING
B - ANATOMY AND HISTOLOGY BUILDING
C - PHYSIOLOGY AND PHYSIOLOGICAL CHEMISTRY BUILDING
D - BACTERIOLOGY AND PATHOLOGY BUILDING
E - HYGIENE AND PHARMACOLOGY BUILDING
F - ANIMAL HOUSE

PLAN OF BASEMENTS



HYGIENE AND PHARMACOLOGY BUILDING
SECOND FLOOR PLAN



BACTERIOLOGY AND PATHOLOGY BUILDING
SECOND FLOOR PLAN

FLOOR PLANS. HARVARD UNIVERSITY MEDICAL SCHOOL BUILDINGS, BOSTON, MASS.

Messrs Shepley, Rutan & Coolidge, Architects

The American Architect and Building News.
Regular Edition.

Volume XCII Number 1669.
December 21, 1907.

Copyright, 1907, by the Swetland Publishing Co.

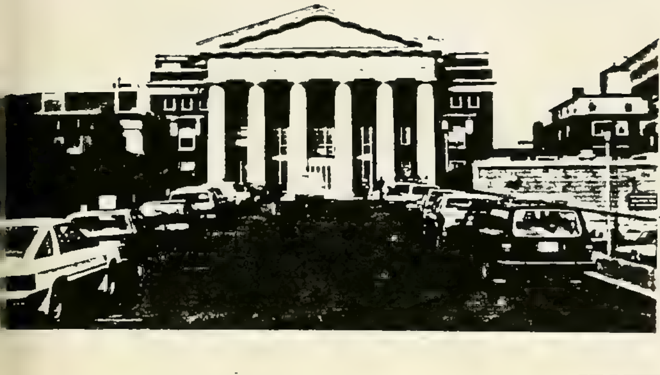
BOSTON LANDMARKS COMMISSION Building Information Form Form No. [illegible] Area FENWAY

ADDRESS 721 HUNTINGTON COR. BRIGHAM CIRCLE

NAME (part of) BRIGHAM & WOMEN'S HOSPITAL; PETER BENT BRIGHAM HOSPITAL
present original

MAP No. 21 N-8E SUB AREA FENWAY-LONGWOOD

DATE 1911-1913 HOSPITAL ANNUAL REPORTS
source



ARCHITECT CODMAN & DESPRADELLE ANNUAL REPORTS
source

BUILDER
source

OWNER: PETER BENT BRIGHAM HOSPITAL
original present

PHOTOGRAPHS FW 6 1/1; 1/2; 1/3; 3/6-83

TYPE (residential) single double row 2-fam. 3-deck ten apt.
[✓ non-residential] HOSPITAL

NO. OF STORIES (1st to cornice) 3 plus 2 AND 3 STORY BLDGS ALONG SHATTUCK ST.

ROOF FLAT cupola dormers

MATERIALS (Frame) clapboards shingles stucco asphalt asbestos alum/vinyl
[✓ Other] [✓ brick] stone [✓ concrete] TRIM iron/steel/alum.

BRIEF DESCRIPTION COMPLEX OF INTERCONNECTED HOSPITAL BUILDINGS: CENTRAL CLASSICAL REVIVAL RED BRICK STRUCTURE OF 3 STORIES FEATURES PROMINENT DORIC STYLE PEDIMENTED PORTICO (6 COLUMNS), LARGE WINDOWS AT 1ST + 2ND STORIES AND SMALL 3RD STORY OPENINGS. ON REAR (SHATTUCK ST.) OF CENTRAL STRUCTURE, 4-STORY + BASEMENT WINGS EXTEND FROM 3-STORY CENTER ENTRY FACADE. WINGS OF 2 + 3 STORIES ABOVE BASEMENT EXTEND TOWARDS BRIGHAM CIRCLE, FORMING "U"-SHAPE PLAN. FENESTRATION ON WINGS IS LARGELY DOUBLE-HUNG SASH, BUT SOME *

EXTERIOR ALTERATION RANGES FROM: [✓ minor] moderate [✓ drastic] MANY ADDITIONS; MUCH NEW CONSTRUCTION COMPLETED OR UNDERWAY.

CONDITION [✓ good] fair poor LOT AREA 385,824 + sq. feet

NOTEWORTHY SITE CHARACTERISTICS CORNER LOCATION, FACING BRIGHAM CIRCLE. LANDSCAPED STRIP REMAINS TO LEFT OF MAIN APPROACH.

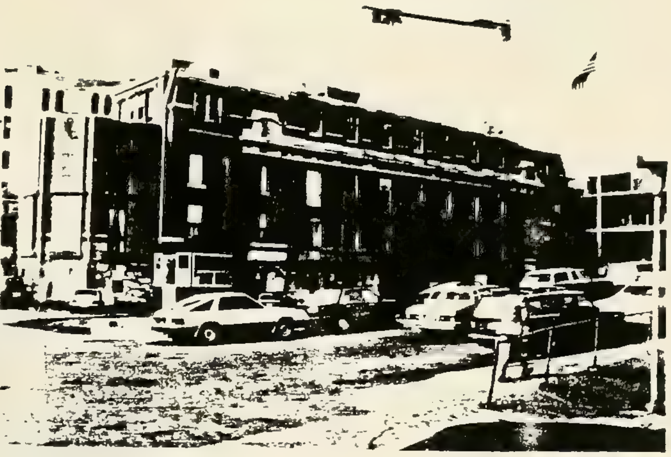
DESCRIPTION: SIGNIFICANCE (~~cont'd~~ on reverse)

(Map)

* OPENINGS HAVE BEEN BLOCKED IN OR OBSCURED. (LENGTH OF WINGS - 13 BAYS) TERMINATING IN OCTAGONAL PAVILIONS. NONE OF THE 5 ORIGINAL PAVILION-STYLE WARD BUILDINGS REMAIN ON FRANCIS ST., HAVING BEEN REPLACED BY THE NEW STRUCTURES OF BRIGHAM & WOMEN'S HOSPITAL. ALONG SHATTUCK ST. (FORMERLY VAN DYKE), 2 AND 3-STORY CONNECTED BUILDINGS REMAIN. NEW TOWER AND AMBULATORY BLDGS. ARE AT NORTHWEST END OF PROPERTY, NEAR BINNEY ST.

III .CK. 5/84

Moved; date if known ____________



Themes (check as many as applicable)

Aboriginal	____	Conservation
Agricultural	____	Education
Architectural	✓	Exploration/ settlement
The Arts	____	
Commerce	____	Industry
Communication	____	Military
Community/ development		Political
MEDICINE	✓	

Significance (include explanation of themes checked above)

AN ARCHITECTURALLY NOTABLE EXAMPLE OF CLASSICAL REVIVAL INSTITUTIONAL DESIGN WHICH HAS HISTORIC SIGNIFICANCE AS THE ORIGINAL HOME OF THE PETER BENT BRIGHAM HOSPITAL, ONE OF THE EARLY HOSPITALS IN THE LONGWOOD AREA, NOW THE LOCATION OF MANY BOSTON MEDICAL FACILITIES. SINCE ITS BEGINNING THE HOSPITAL HAS MAINTAINED CLOSE TIES WITH THE HARVARD MEDICAL SCHOOL, AS A TEACHING HOSPITAL.

PETER BENT BRIGHAM HAD COME TO BOSTON FROM VERMONT AND PROSPERED IN THE RESTAURANT BUSINESS. HE LIVED FROM 1807-1877; HIS WILL PROVIDED FUNDS TO FOUND A HOSPITAL "FOR THE CARE OF SICK PERSONS IN INDIGENT CIRCUMSTANCES RESIDING IN THE COUNTY OF SUFFOLK." THE SITE AT HUNTINGTON AND FRANCIS ST. HAD BEEN PART OF THE EBENEZER FRANCIS ESTATE DURING MUCH OF THE 19TH CENTURY, THEN OWNED BY HARVARD MEDICAL SCHOOL (SEE INVENTORY FORM, 230 LONGWOOD), BEFORE BEING PURCHASED BY THE HOSPITAL. GROUND WAS BROKEN IN AUGUST, 1911.

THE HOSPITAL CORPORATION WAS ORGANIZED MAY 8, 1902. DR. JOHN SHAW BILLINGS WAS ENGAGED TO ADVISE ON & WAS INSTRUMENTAL IN PLANNING THE HOSPITAL. ALONG WITH PROF. F. W. CHANDLER & DR. H. B. HOWARD, HE SELECTED CODMAN & DESPRADELLE FROM AMONG SIX ARCHITECTS COMPETING FOR THE COMMISSION. A PORTION OF THE HOSPITAL WAS OPENED WITH THE FIRST PATIENT ADMITTED JAN. 27, 1913. IN THE ENSUING MONTHS OF 1913, OTHER SECTIONS & BUILDINGS WERE OPENED. ITS DESIGN OF THE HOSPITAL WAS OF THE "PAVILION STYLE." THE ARCHITECTURAL*

Preservation Consideration (accessibility, re-use possibilities, capacity for public use and enjoyment, protection, utilities, context)

RECOMMENDED FOR NATIONAL REGISTER DESIGNATION.

*RECORD (DECEMBER, 1915) CITED THE BRIGHAM FOR ITS PLANNING IN AN ARTICLE, "THE AMERICAN HOSPITAL DEVELOPMENT." AT THE OPENING, THE PRESIDENT OF THE TRUSTEES WAS ALEXANDER COCHRANE; 1ST CHIEF SURGEON WAS DR. HARVEY CUSHING, AND 1ST CHIEF PHYSICIAN DR. HENRY A. CHRISTIAN. THE HOSPITAL BUILDINGS WERE DESIGNED TO ACCOMODATE 200 PATIENTS.

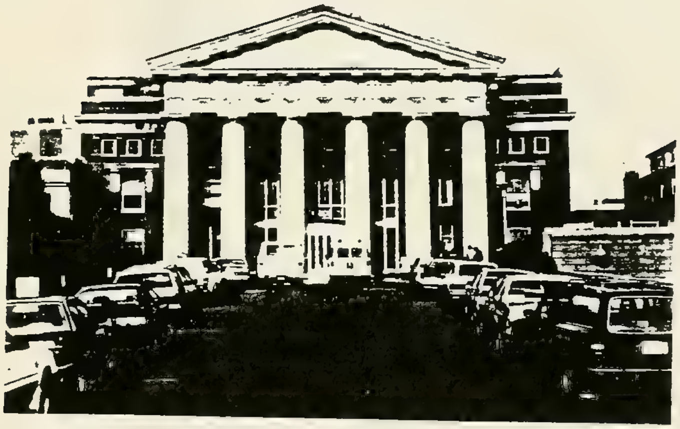
SIGNIFICANT MEDICAL ACHIEVEMENTS HERE HAVE INCLUDED THE DEFINITION OF CUSHING'S SYNDROME & OTHER ENDOCRINOPATHIES, THE USE OF LIVER EXTRACT FOR PERNICIOUS ANEMIA, THE FIRST SUCCESSFUL KIDNEY TRANSPLANT, DELINEATION OF THE METABOLIC RESPONSE TO SURGERY, AND THE CLINICAL APPLICATION OF DIALYSIS FOR RENAL FAILURE. THE ORIGINAL BRIGHAM IS NOW PART OF THE BRIGHAM & WOMEN'S HOSPITAL.

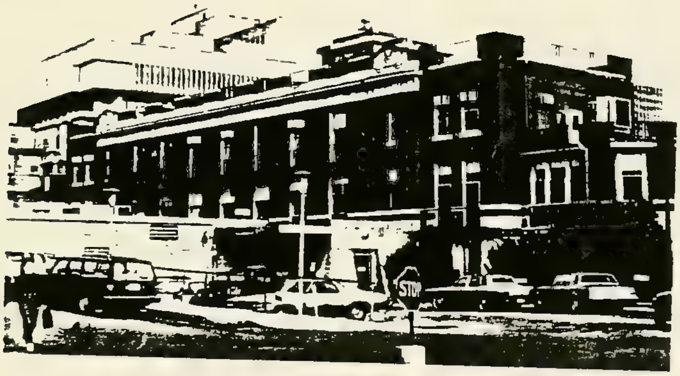
Bibliography and/or references (such as local histories, deeds, assessor's records, early maps, etc.)

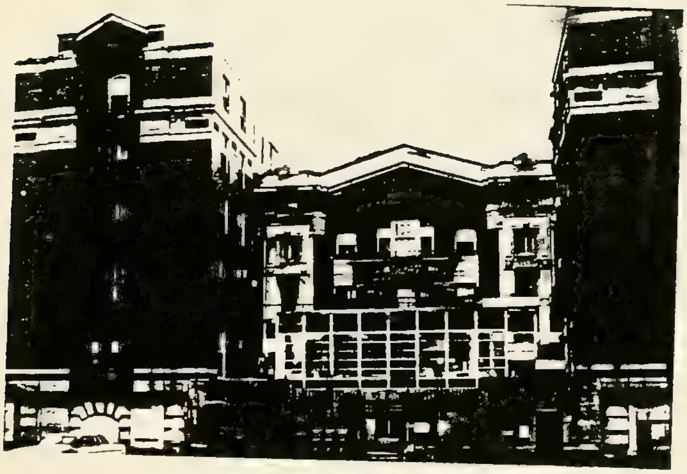
AT THE HEART OF A GREAT MEDICAL CENTRE, 1913-1938. BOSTON, MA.
AESCULAPIAN BOSTON. Section on Brigham Hospital by Leslie A. Vensel.
ANNUAL REPORTS. PETER BENT BRIGHAM HOSPITAL.
THE FABRICK OF MAN, by David McCord. 1963.

BOSTON LANDMARKS COMMISSION. Building info. Form
Page 2

Form No. 525, FENWAY
Brigham Hospital
721 Huntington Ave.

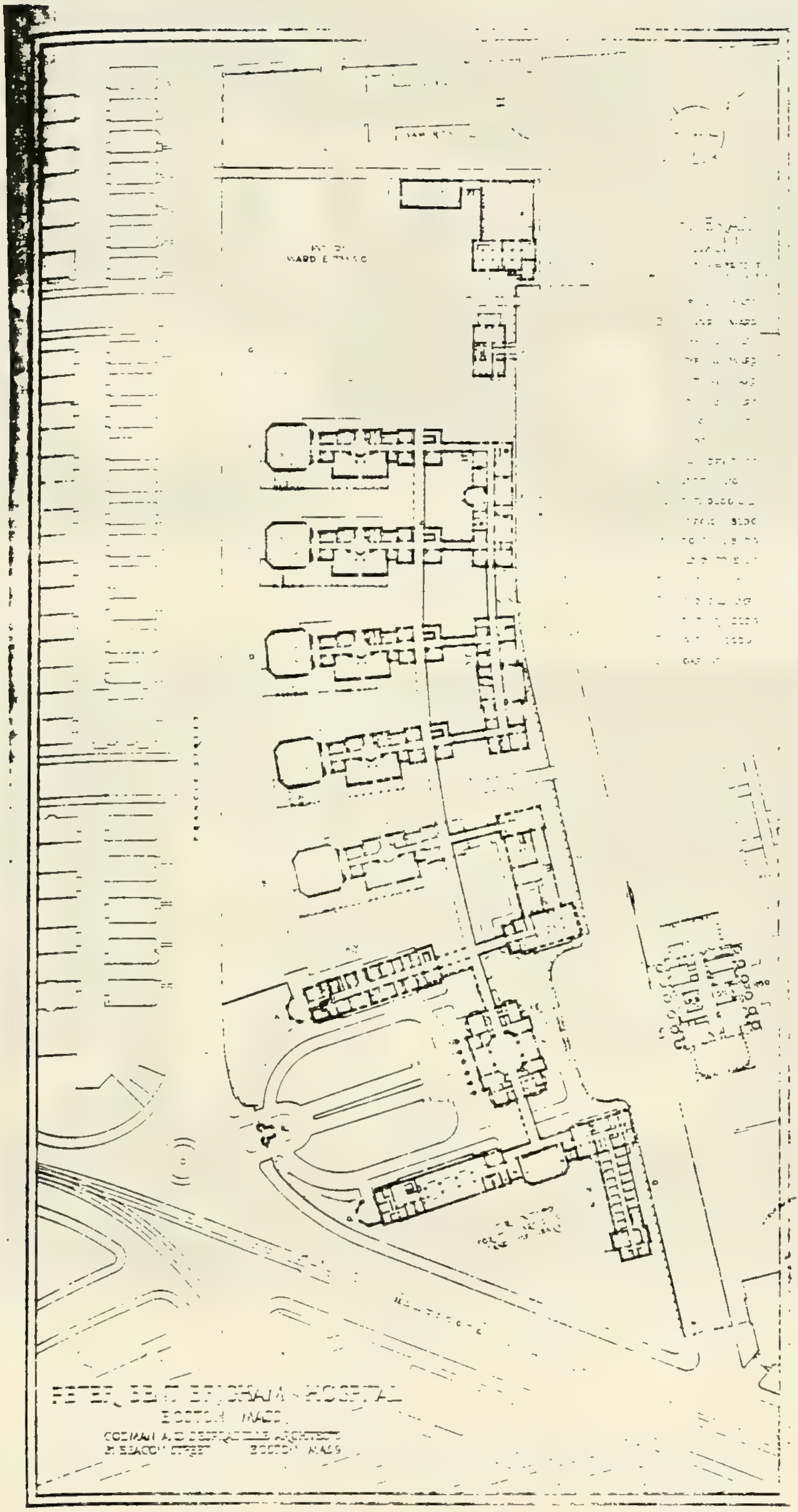






SHATTUCK ST. FACADE
(REAR)

F/K 525


PETER BENT BRIGHAM HOSPITAL
BOSTON MASS.
CODMAN AND DESPRADELLE ARCHITECTS
31 BEACON STREET BOSTON MASS

TON
LIC
Y

From: The Architectural Record
December, 1915. Vol. 38, No. 6. Serial no. 207
"The American Hospital Development"
by Edward F. Stevens. Page 653.

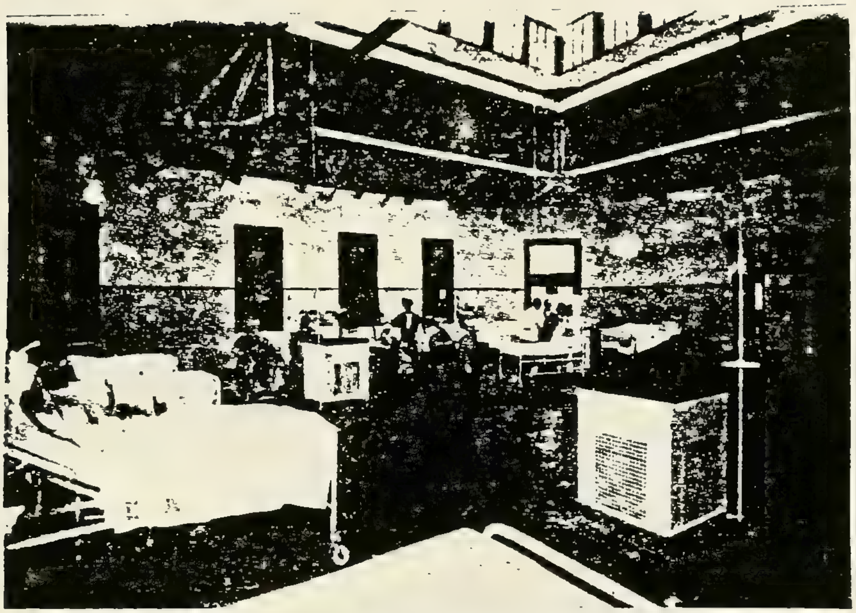


FIG. 19. INTERIOR PAVILION "C," PETER BENT BRIGHAM HOSPITAL, BOSTON, MASS.
Codman & Despradelle, Architects.

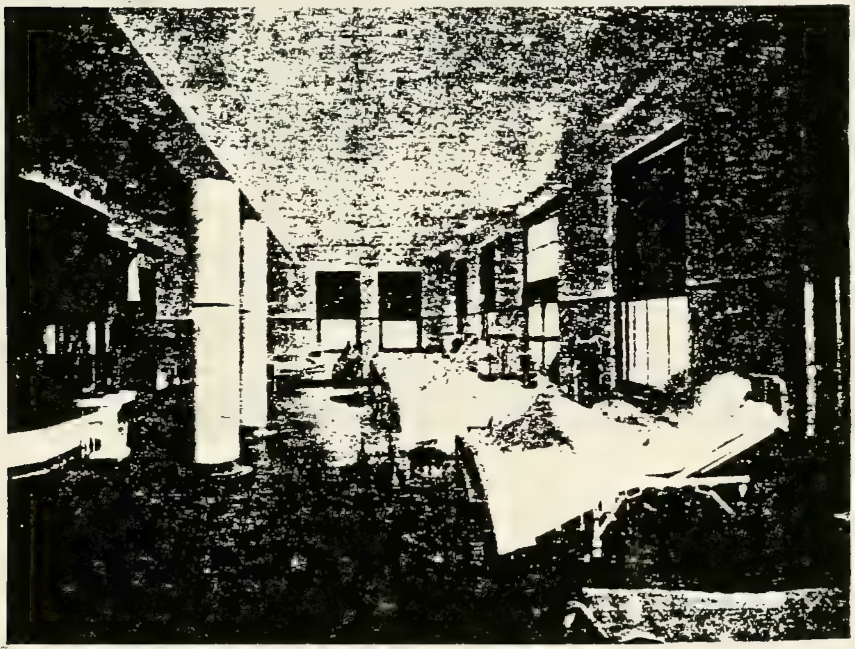
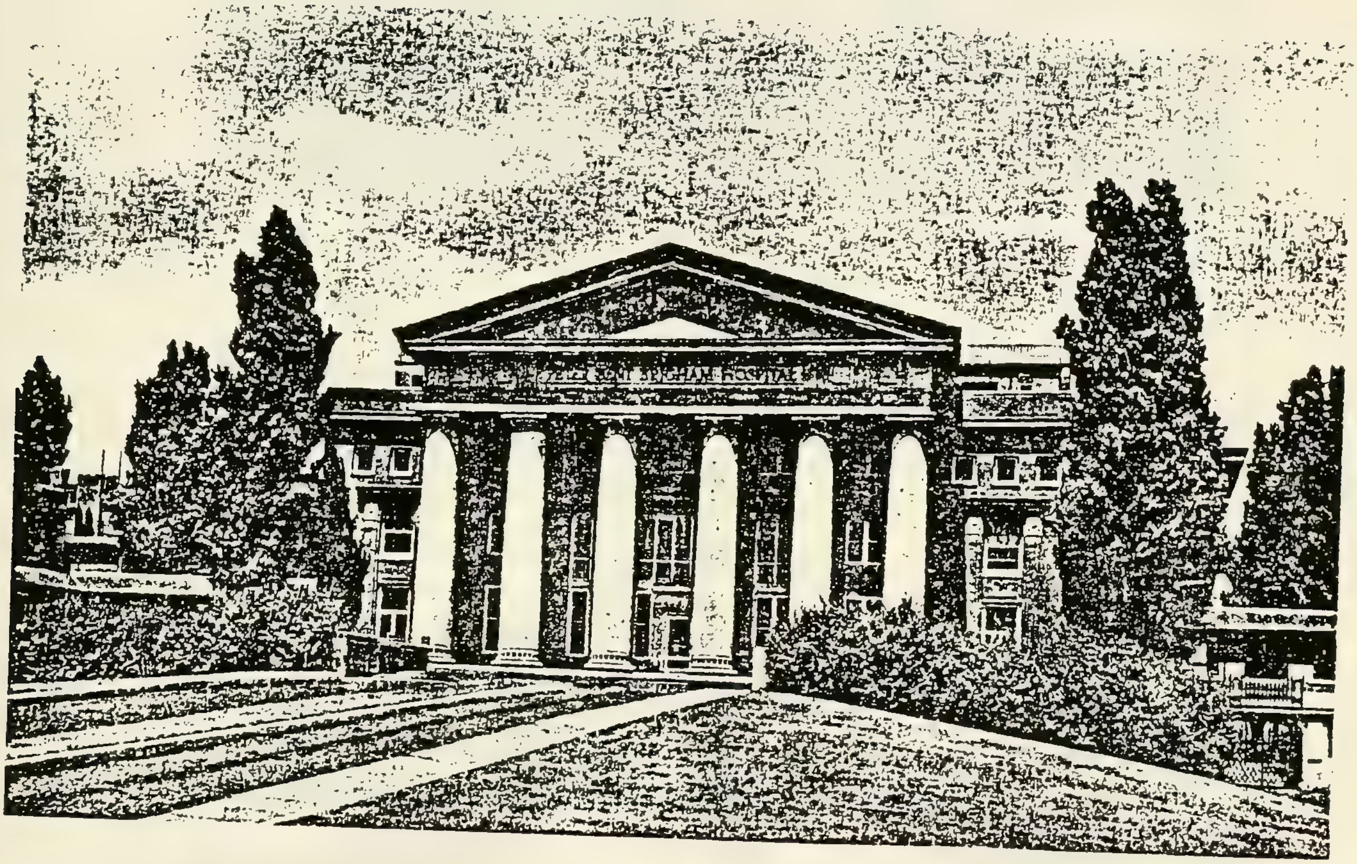


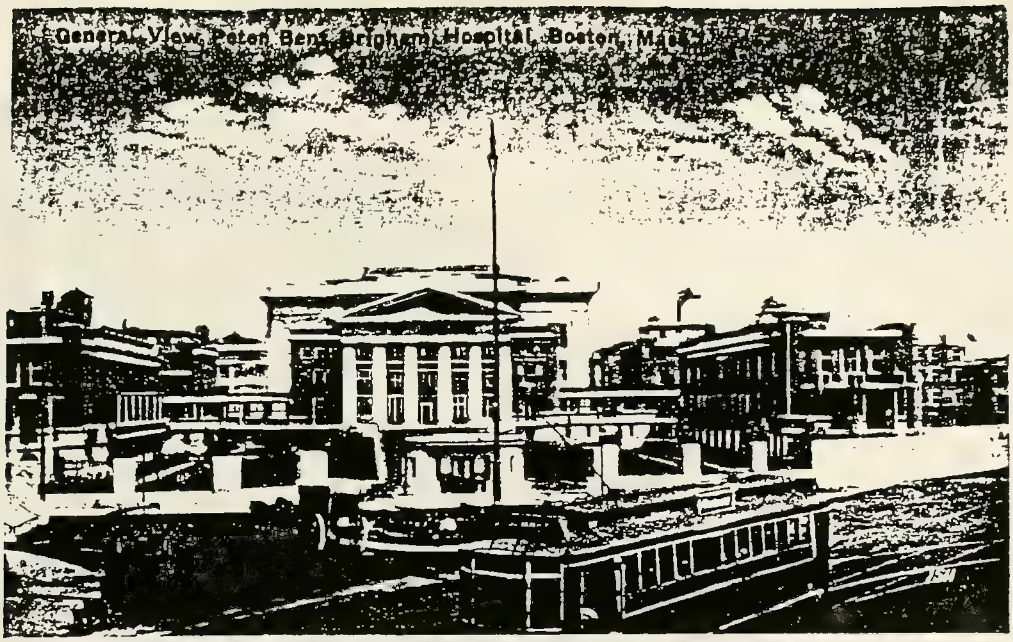
FIG. 20. INTERIOR OF WARD, PAVILION "C," PETER BENT BRIGHAM HOSPITAL, BOSTON, MASS.
Codman & Despradelle, Architects.

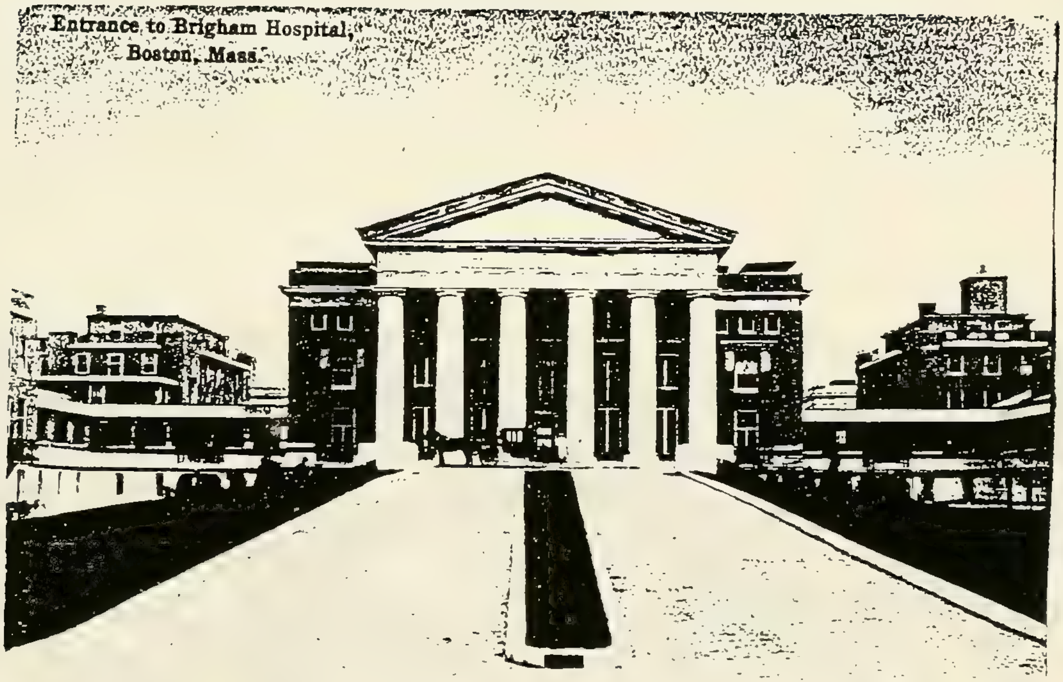
From: The Architectural Record. December, 1915.
page 656

F/K 52



From: At the Heart of a Great Medical Center:
a record of the past and a promise for
the future, 1913-1938.





SPNEA. Postcard collection.

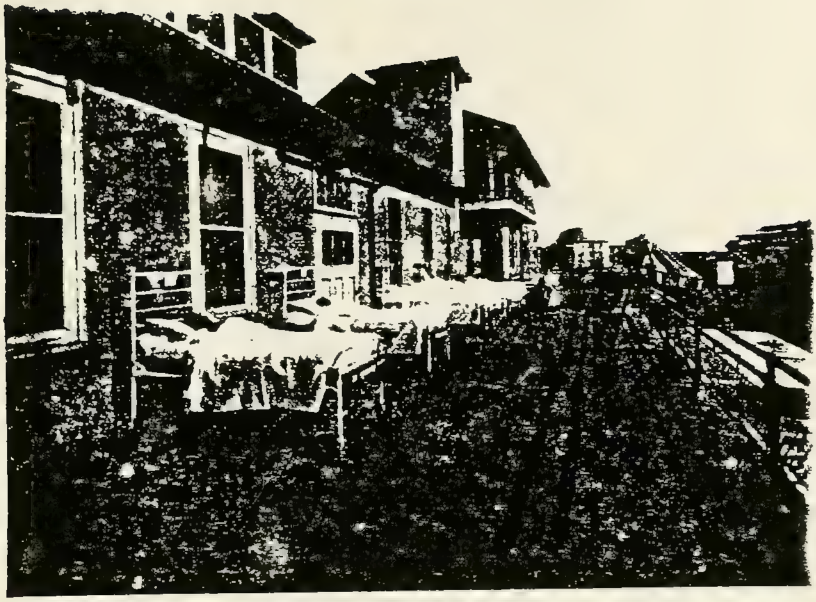
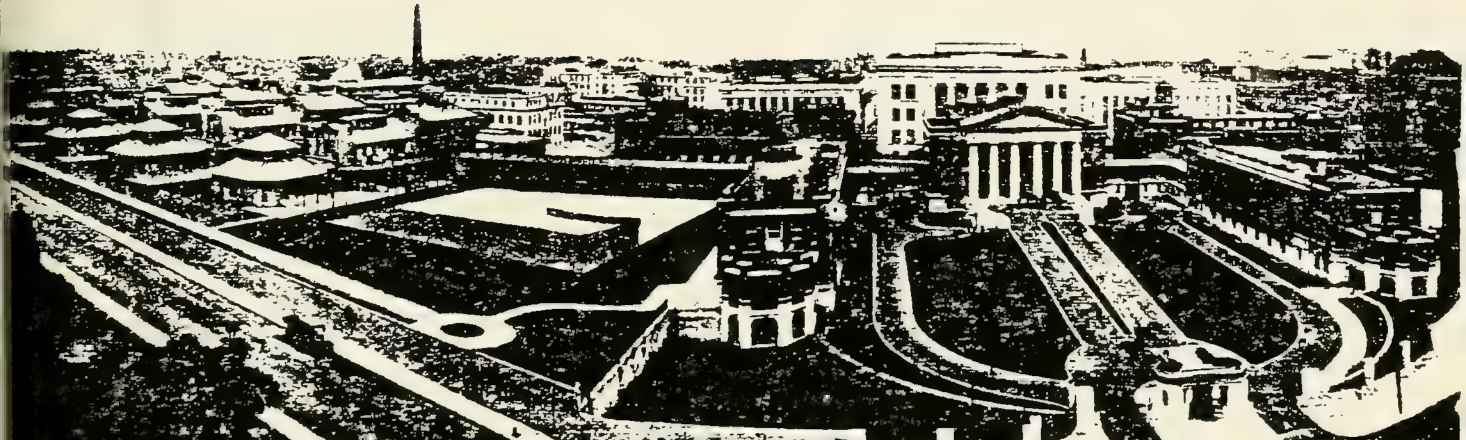
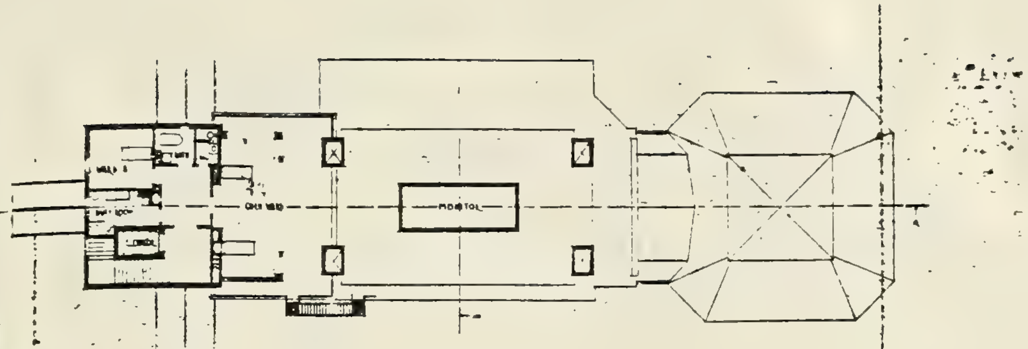


FIG. 21. AIRING BALCONY, PAVILION "C," PETER BENT BRIGHAM HOSPITAL
BOSTON, MASS.
Codman & Despradelle, Architects.

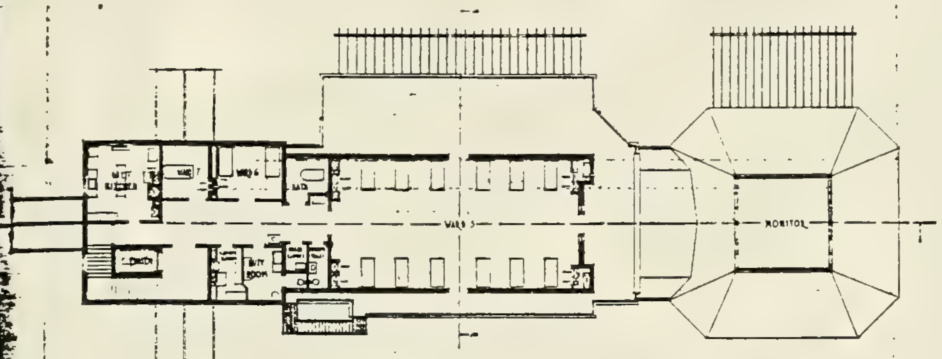


From: The Architectural Record. December, 1915.
Airing balcony: page 657
Aerial overall view: page 654



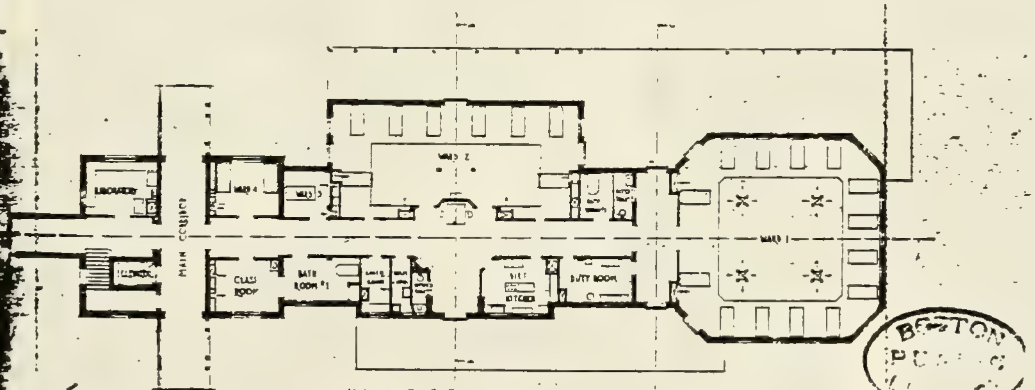
THIRD FLOOR PLAN

SCALE FEET



SECOND FLOOR PLAN

SCALE FEET



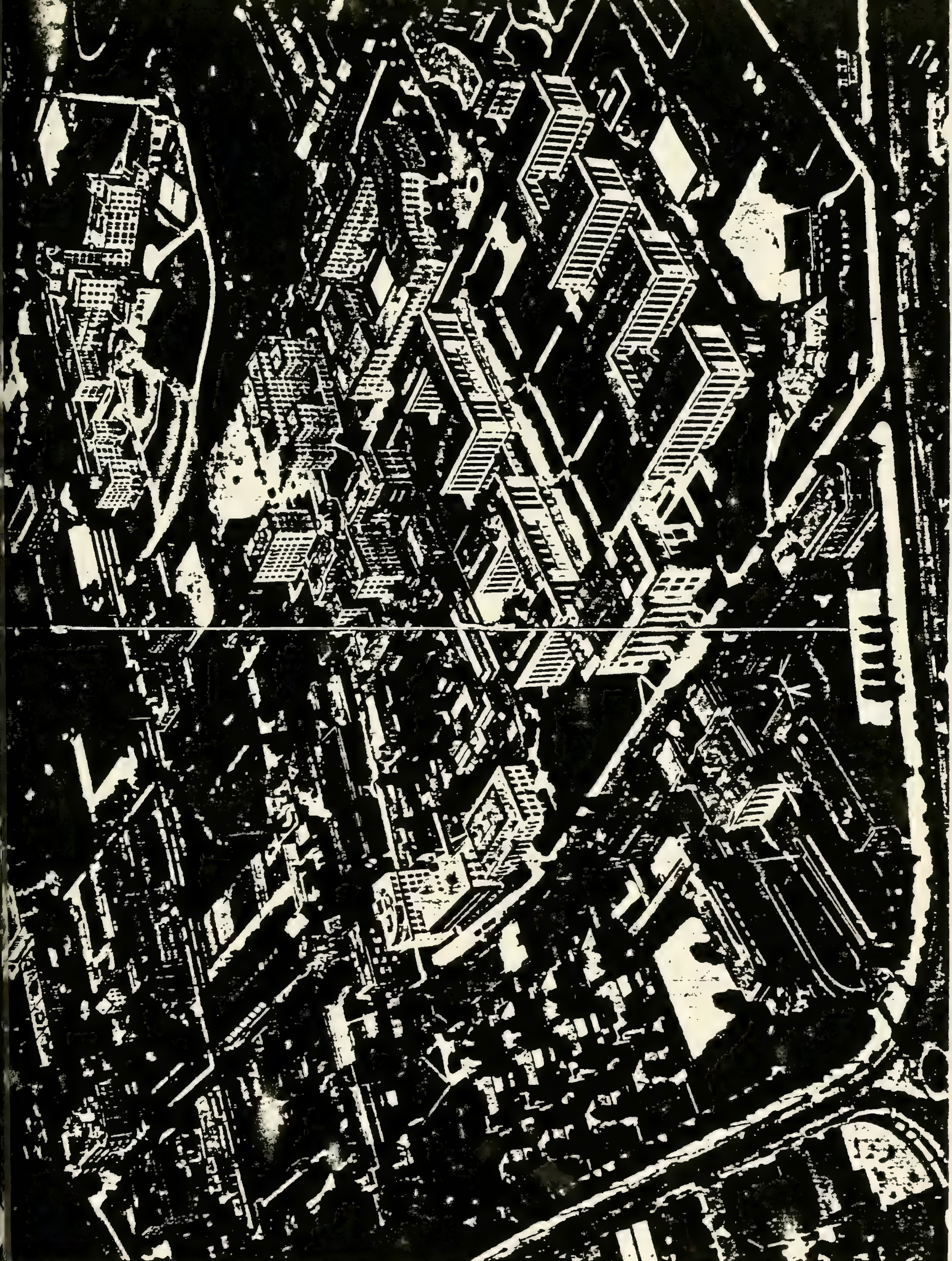
MAIN FLOOR PLAN

SCALE FEET

FIGS. 16, 17 AND 18. FLOOR PLANS, PETER BENT BRIGHAM HOSPITAL, BOSTON.
Codman & Despradelle, Architects.

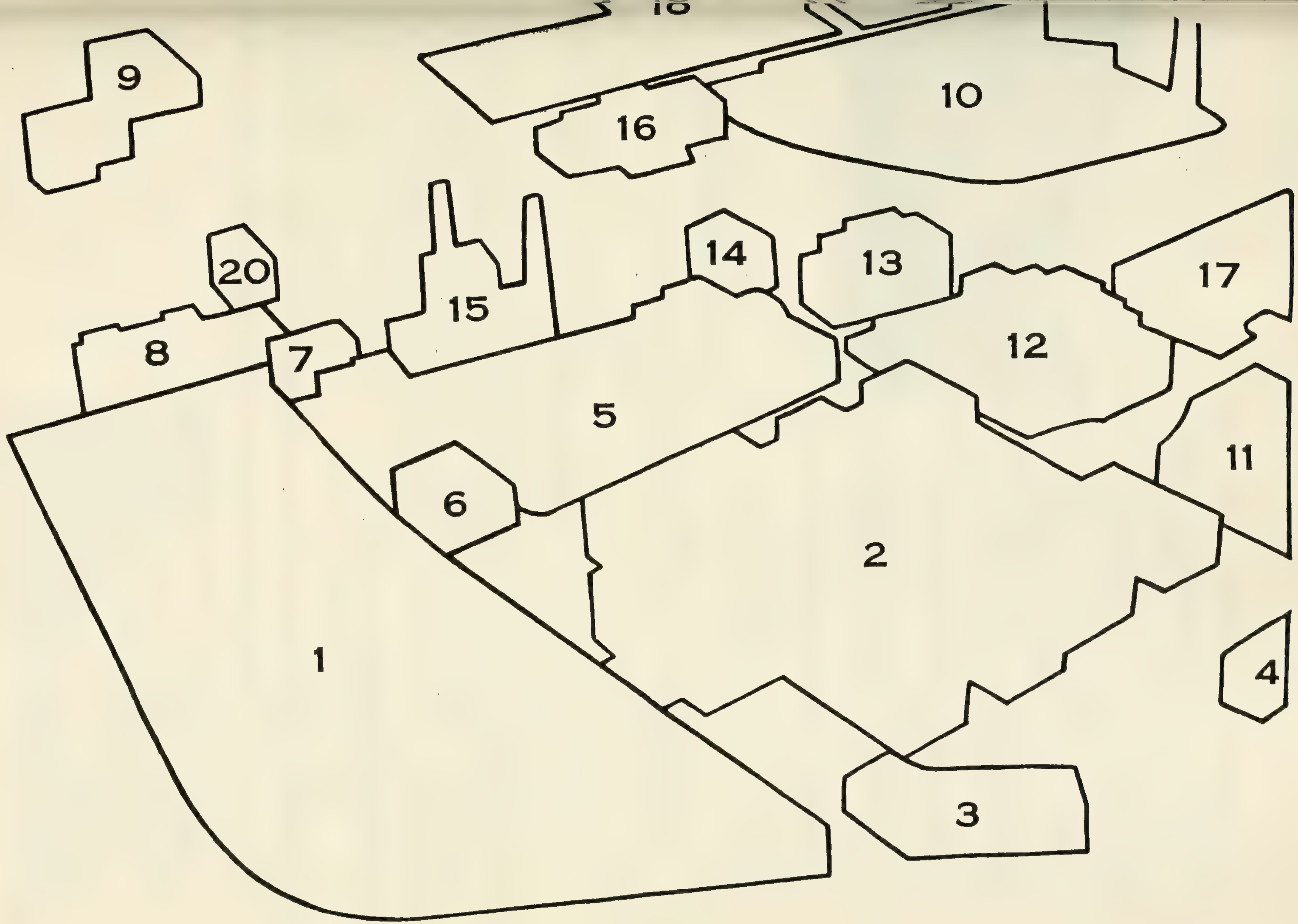
From: The Architectural Record. December, 1915.
page 655

BOSTON PUBLIC



Aero-Scenic Airviews Co

From: At the Heart of a Great Medical Centre



1 Peter Bent Brigham Hospital
2 Harvard Medical School
3 Collis P. Huntington Memorial Hospital
4 Harvard Dental School
ital

6 Harvard School of Public Health
7 Carnegie Metabolism Laboratory
8 House of the Good Samaritan

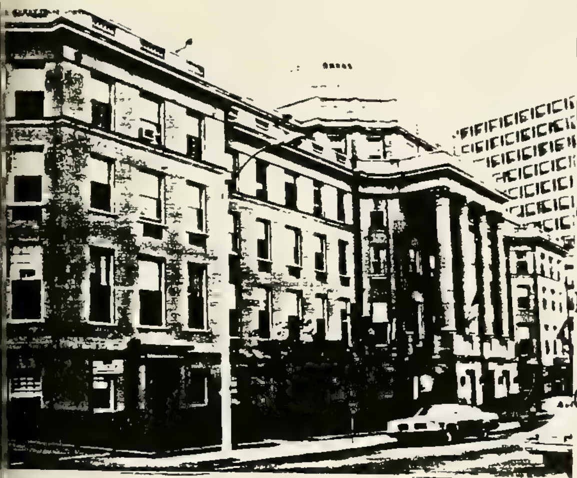
11 Boston Lying-In Hospital
12 Vanderbilt Hall, Students' Dormitory
13 Nurses' Home, Children's Hospital
14 Longwood Medical Building

16 Massachusetts School of Art
17 Boston Latin School
18 Winsor School
19 Simmons College Dormitory

BOSTON LANDMARKS COMMISSION Building Information Form Form No. [illegible] Area FENWAY

ADDRESS 300 LONGWOOD AVE. COR. BLACKFAN ST.

NAME CHILDREN'S HOSPITAL
present original



MAP No. 21 N - 8E SUB AREA FENWAY - LONGWOOD

DATE 1912 BUILDING PERMIT
source

ARCHITECT SHEPLEY, RUTAN, & COOLIDGE BLDG. PERMIT
source

BUILDER H. L. HEMENWAY Co. BLDG. PERMIT
source

OWNER CHILDREN'S HOSPITAL SAME
original present

PHOTOGRAPHS FW 6 5/6, 6/1, 6/2-83

TYPE (residential) single double row 2-fam. 3-deck ten apt.
[✓ non-residential] HOSPITAL

NO. OF STORIES (1st to cornice) 4 [5 STORY BASE FOR CENTRAL DOME] plus HIGH BASEMENT

ROOF FLAT DOME cupola dormers

MATERIALS (Frame) clapboards shingles stucco asphalt asbestos alum/vinyl
[✓ Other] brick [✓ stone] CONCRETE CONGLOMERATE concrete iron/steel/alum.

BRIEF DESCRIPTION CLASSICAL REVIVAL STYLE INSTITUTIONAL BUILDING FEATURING CORINTHIAN-COLUMNED PORTICO ATOP RAISED BASEMENT STORY CONTAINING ENTRANCE [ORIGINALLY, CURVING STAIRWAYS LED TO FIRST FLOOR ENTRY], AND CROWNED BY COPPER DOME. FRONT FACADE CONTAINS TOTAL OF 25 BAYS IN 5 PARTS. CENTER & END PAVILIONS PROJECT SLIGHTLY FROM MAIN BODY OF THE STRUCTURE. SECONDARY FRONT ENTRANCES IN DORIC PORTICOS ARE LOCATED*

EXTERIOR ALTERATION [✓ minor] moderate drastic NEW ADDITIONS AT REAR; SKYWAY ACROSS BLACKFAN ST. TO CHILDREN'S INN COMPEX

CONDITION [✓ good] fair poor LOT AREA 159,009 + sq. feet

NOTEWORTHY SITE CHARACTERISTICS SLIGHT SETBACK FROM STREET (LONGWOOD AVE.) WITH HEDGEROWS AND SMALL TREES. LOCATION IS IN MIDST OF LONGWOOD MEDICAL AREA

SIGNIFICANCE (~~cont'd~~ on reverse)

*DESCRIPTION: NEAR END WALLS, DECORATIVE EMPHASIS IS ADDED BY DENTIL COURSE, CORNICE, ROOF BALUSTRADE, AND ROUNDEL WITH INFANT OVER NAME PANEL AT MAIN PORTICO. SOUTHEAST SIDE FACADE CONTAINS 6 BAYS; NORTHWEST SIDE FACADE HAS 13 BAYS. THE ORIGINAL PAVILION WARDS HAVE BEEN REPLACED BY THE CA. 1965 MODERN CONCRETE ADDITION WHICH EXTENDS TO THE REAR ALONG BLACKFAN ST. (6 STORIES), AND 11-STORY TOWER.

(Map)

II. CK. 5/84

SIGNIFICANCE CONTINUED:

THE MAIN BUILDING HOUSED THE FOLLOWING: CENTRAL WING – ADMINISTRATIVE OFFICES, EXAMINING AND ADMITTING ROOMS, KITCHEN & STORE ROOMS, MAID'S QUARTERS, PRIVATE WARDS, LIBRARY, & HOUSE OFFICERS' QUARTERS; SOUTH WING – NURSES' HOME; NORTH WING – OUT-PATIENT DEPT. (WITH SURGICAL BUILDING BEHIND OUT-PATIENT DEPT).

PHOTOS AND PLANS OF THE HOSPITAL WERE PUBLISHED IN THE AMERICAN ARCHITECT (OCTOBER 21, 1914). ARCHITECTS SHEPLEY, RUTAN, & COOLIDGE WERE ALSO RESPONSIBLE FOR THE FOLLOWING BUILDINGS IN THE FENWAY AREA: YMCA (312-320 HUNTINGTON AVE), HARVARD MEDICAL SCHOOL (230-240 LONGWOOD AVE.); INFANTS' HOSPITAL (55 SHATTUCK).

CHILDREN'S HOSPITAL REMAINS THE PRIMARY PEDIATRIC TEACHING HOSPITAL OF HARVARD MEDICAL SCHOOL. THE HOSPITAL HAS GROWN TO BECOME THE LARGEST PEDIATRIC HEALTH CARE INSTITUTION IN THE COUNTRY.

Moved; date if known ____________

Themes (check as many as applicable)

Aboriginal ____
Agricultural ____
Architectural ✓
The Arts ____
Commerce ____
Communication ____
Community/development ____

Conservation ____
Education ____
Exploration/settlement ____
Industry ____
Military ____
Political ____

Recreation ____
Religion ____
Science/(MEDICINE) invention ✓
Social/humanitarian ____
Transportation ____

Significance (include explanation of themes checked above)

A NOTEWORTHY EXAMPLE OF CLASSICAL REVIVAL INSTITUTIONAL ARCHITECTURE, THIS BUILDING WAS PUT UP IN 1912-1914 FOR BOSTON'S CHILDREN'S HOSPITAL, WHICH HAS SIGNIFICANCE AS THE THIRD PEDIATRIC HOSPITAL ESTABLISHED IN THE U.S. IT WAS INCORPORATED IN 1869 BY CHANDLER ROBBINS, GEORGE H. KUHN, AND NATHANIEL H. EMMONS. NATHANIEL THAYER WAS FIRST PRESIDENT. OBJECTIVES OUTLINED IN THE BY-LAWS WERE: THE MEDICAL & SURGICAL TREATMENT OF SICK CHILDREN; INSTRUCTION IN THE DISEASES OF CHILDREN; AND INSTRUCTION OF YOUNG WOMEN IN THE DUTIES OF NURSES & NURSERY MAIDS.

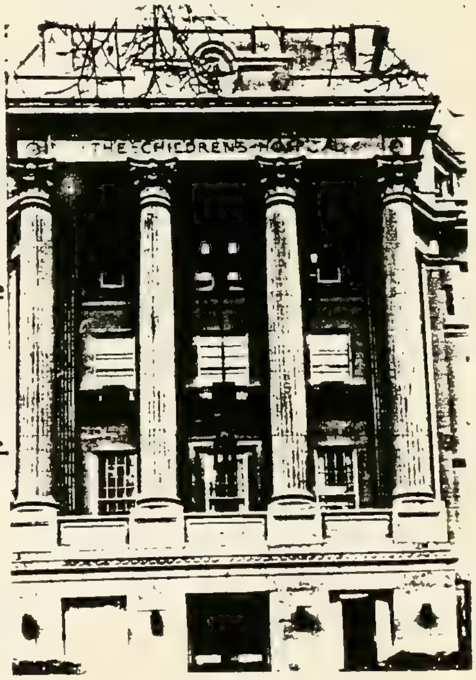
WORK OF THE HOSPITAL WAS BEGUN IN A DWELLING AT #9 RUTLAND IN THE SOUTH END, MOVED TO 1429 WASHINGTON ST. IN 1870, AND IN 1882 TO ITS LOCATION ON HUNTINGTON AVE. THE HOSPITAL'S SCHOOL OF NURSING WAS ESTABLISHED IN 1889.

BY 1911, PLANS WERE UNDERWAY FOR THIS BUILDING AT 300 LONGWOOD, WITH ARCHITECTS SHEPLEY, RUTAN, AND COOLIDGE RESPONSIBLE FOR THE DESIGN. CONSTRUCTION WAS BEGUN IN 1912. THE NEW BUILDINGS ON LONGWOOD WERE FULLY OCCUPIED IN JUNE, 1914. THESE INCLUDED THE BUILDING PRESENTLY AT 300 LONGWOOD AND STUCCOED PAVILION WARD BUILDINGS (FOUR, WITH CONNECTING CORRIDORS) WHICH HAVE BEEN DEMOLISHED AND REPLACED BY RECENT CONSTRUCTION OF THE HOSPITAL. UPON ITS DEDICATION (APRIL 15, 1914), THE BOSTON HERALD REFERRED TO CHILDREN'S AS "THE MOST COMPLETE & MOST FINELY APPOINTED HOSPITAL FOR CHILDREN IN THE COUNTRY, IF NOT IN THE WORLD."

(CONTINUED)

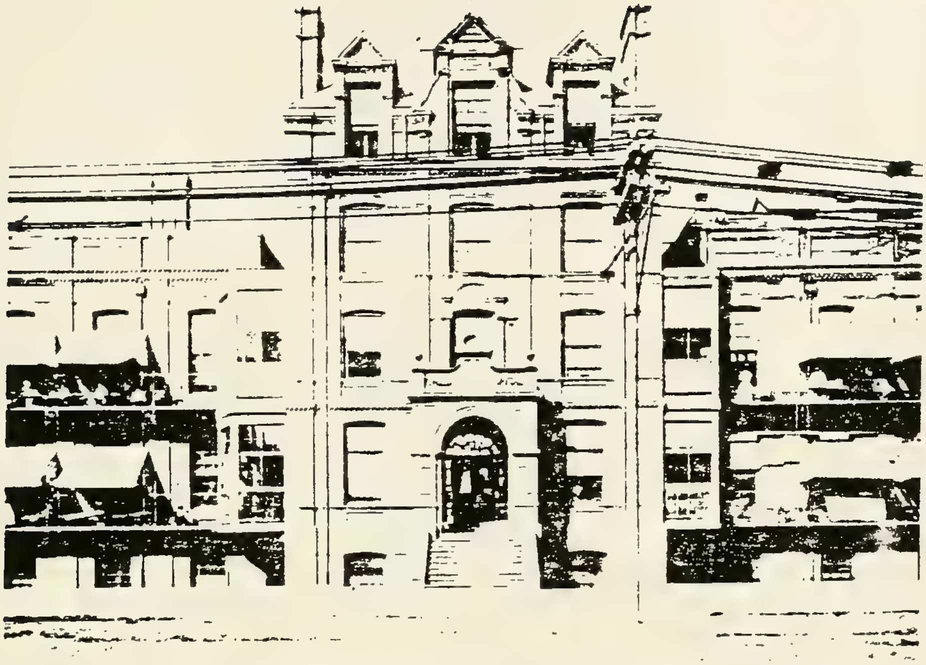
Preservation Consideration (accessibility, re-use possibilities, capacity for public use and enjoyment, protection, utilities, context)

RECOMMENDED FOR NATIONAL REGISTER AND BOSTON LANDMARK STATUS.



Bibliography and/or references (such as local historie records, early maps, etc.)

ANNUAL REPORTS. CHILDREN'S HOSPITAL.
BOSTON BUILDING PERMITS. (April 17, 1912)
SNEDEKER, LENDON, M.D. ONE HUNDRED YEARS AT CHILDREN'S BOSTON. 1969.
THE AMERICAN ARCHITECT. OCTOBER 21, 1914.
BROMLEY, G.W. ATLAS OF BOSTON-ROXBURY. 1915.



The Hospital on Huntington Avenue (1882-1914).

300 Longwood Avenue in 1919.

From: One Hundred Years at Children's.

DESCRIPTION OF THE NEW HOSPITAL.

The *main building* of The Children's Hospital commemorates separate gifts. The building for out-patients at the corner of Vila street, adjoining the administration building on the west is the gift of Mr. Francis W. Hunnewell. The Home for Nurses on the east of the administration building is built from money left for the purpose by Anne White Vose. These main buildings are fireproof throughout, and are five stories in height. The different parts are separated by fire walls. The exterior of the building is a concrete conglomerate consisting of crushed trap rock, sand and Portland cement, having a natural gray color.

As one enters the *administration building* on the street floor through the patients' entrance, there are on each side of the hall reception rooms and small examining rooms and bath rooms for patients. To these rooms the parents bring their children when sent by their physicians to be admitted to the wards, and in these rooms the administrators of the hospital arrange with the parents for the admission of the children while the house physicians and surgeons obtain the history of the illness and make a complete examination of the child. Off the main hall also is a dressing room for medical students.

Behind the main hall, but not connecting with it, are the kitchen, pantries, refrigerators and store room, as well as the dining rooms for the maids and for the male attendants. All of these rooms are reached from the rear of the building and from the yard, where all supplies are received.

On the street floor, also opening off the main hall, is the Library, which it is expected will in time become a complete reference library dealing with the diseases of children, and which will be a meeting place for the alumni of the hospital, and a place of study for students and physicians who may wish to avail themselves of its opportunities. It is the purpose of the staff that this library shall be of the widest possible usefulness. The stack room, in which all the case records are kept, adjoins

FROM: The Children's Hospital. Forty-sixth
Annual Report for 1914.

F/K 529

it, so that any one studying cases may easily obtain the needed records. Close by is provided a room for the stenographer, who may also act as a librarian.

A staff room, with the necessary lockers, connects the library with the out-patient building.

On the main floor of the administration building are the executive offices, reception rooms, and the superintendent's suite. The Roentgenological department lies between the out-patient department and the administration building. It is the gift of Mrs. Weld. It contains a small waiting room for out-patients, coil and tube rooms, developing and store rooms, and office. It is so arranged that house patients and out-patients do not come in contact, a measure of precaution against contagious disease.

Most of the second floor is devoted to the house officers' quarters, though in the front there are the Chapel and the Managers' room.

The third floor has rooms for the Ladies' Aid Association in the front. In the rear of the third and fourth floors are three floors for the maids, their rooms being reached by a special stairway and elevator in the rear of the building.

The fourth floor is devoted to rooms for private patients, together with the necessary parlor, play room, diet kitchen and service rooms. There are rooms for a mother and child, rooms for a child alone and rooms for three or four children. Opening off the ward are large balconies on both the front and back of the building. All the floors are easily reached by the large central stairways and elevators.

In the *Nurses' Home* are rooms for seventy nurses, together with five rooms for the Sisters in charge of the Hospital. There are also the reception rooms, sitting and dining rooms, lecture rooms, library and recreation rooms. The fifth floor provides quiet rooms for night nurses, and an isolated suite for use in case of illness. A special elevator connects all the floors.

The *out-patient building* was planned with reference to the special needs of the several departments. The patients enter on the street floor. All who enter at once pass by the desk of the administrator. If it is the first visit of the patient provisional assignment is made to the proper department, and a ticket

is given to the patient to be kept permanently. At later visits the number of the patient's ticket is taken by the administrator and is sent by an automatic carrier to the recorder, who in turn gets from the stack the history record and sends it in a lift to the proper department. Thus the chief of each division has at his hand the complete record of all the patients whom he is called upon to see during the day. The patients are then passed to the various departments, an elevator carrying them to the proper floor.

If there is suspicion of any contagious disease, in the corner of the building directly behind the desk of the administrator is a suite of three isolation rooms, to which patients may be sent till examined by the physician, and from which they may leave by a special exit if the disease proves contagious. On this same floor are the social service rooms and dispensary for drugs, also suites of small examining rooms and bath rooms, to which children admitted to the wards from the out-patient department are sent. These rooms adjoin and supplement those for the examination of patients sent for admission from outside physicians.

On the main floor are the orthopedic and surgical departments, with their waiting rooms. The orthopedic department contains the examining and plaster rooms, the surgical department, the examining and operating rooms.

On the second floor are the medical and nerve departments and their waiting rooms. The medical department contains the necessary examining rooms, weighing rooms and laboratories, and the nerve department examining and treatment rooms.

The third floor is devoted to the scoliosis and throat clinics. For the former there are the necessary waiting rooms and dressing rooms for the patients, and rooms for exercises and corrective treatment, together with the necessary rooms for the director and teachers.

The throat department has on this floor its examining rooms, etherizing, operating, and recovery rooms. Rooms are also provided for future use for an eye and ear clinic. On the fourth floor is a small ward for throat cases obliged to remain over night in the hospital.

F/K 529

The Surgical Appliance Shop is located in the rear on the street floor, and has its forge and machine rooms, plaster and leather rooms.

The laundry occupies a low detached building behind the Nurses' Home.

The main building is planned for a hospital ultimately to contain four hundred patients. Each of the three departmental wings may be extended backward if necessary. The construction of the building is such that any of the minor partitions may be removed and altered without difficulty.

All the patients except those in the private rooms and in the small ward are housed in the *pavilion wards* and to the south of the main building, hidden away among green grass and shrubbery, of which the passerby on the street has no idea.

The pavilion wards at present are four in number, two of two stories and two of one story, accommodating thus one hundred and twenty patients. The plot of ground on which they are placed is irregular in shape, but the wards are so located as to get the maximum of fresh air and sunshine.

They are reached by a circulating corridor, which has three levels. The lowest is for necessary pipes and heating appliances. The second is half above grade, and is designed for the carriage of food and supplies to the wards. The food is carried on motor trucks in warm containers directly from the kitchen in the rear of the main building through these closed corridors to the several wards. The upper level corridors are for general passages between the several buildings. They are roofed over, and where necessary are screened by glass sash from the weather, and heated by steam. The flat roof of the corridors would serve in an emergency as a fire escape.

The pavilion wards are built of steel and wood covered by rough cast. In the planning of the wards three points were kept constantly in mind, (1) ventilation, (2) out-door treatment, and (3) the control of contagious disease.

Ventilation.—No known system of artificial ventilation is entirely satisfactory. Air may be heated or cooled, dried or moistened, filtered, pumped into or drawn out of a ward and still the air lacks the quality called freshness. It is essential in order to secure really fresh air that windows be open, and open windows derange all artificial ventilating systems. The most satisfactory natural ventilation is secured by the passage of used air directly out through openings at the top of the room. It is further essential that spaces of non-circulating dead air be eliminated. These two objects have been attained by wards with monitor tops and sloping ceilings. The transom windows in each side of the monitor top are easily controlled by mechanism below. In the two-story wards the monitor form is retained in both the upper and lower floor. The ventilation of the lower story is not interfered with in the least by this arrangement, because the outer wall between the eaves of the lower story and the floor of the second story is merely an open lattice between the necessary supporting columns. Thus the out-door air has free access to the windows in the monitor top. The balconies of the second floor, though wide, are so high above the windows of the first story as not to shut off the sunlight.

The problem of securing *out-door treatment* has also been met most successfully. The wide windows on the southerly side of each ward extend to the floor and slide back so that the beds may be easily pushed out on to the piazzas, which on the lower floors are fifteen feet broad. These wide piazzas are covered for half their width, but contrary to the usual custom the roof is over the outer rather than over the inner half. In this way the low running winter sun shines over the piazza roof, entering freely into the wards, as it is desired that it should. The hot summer sun running well toward the zenith does not shine far into the wards under any circumstances. On the other hand, whatever breezes there may be to temper the summer heat circulate more freely under the piazza roof and into the wards when the roof is not close against the building. The sole objection to the plan lies in the exposure to rain in moving the children back and forth across the unroofed strip of piazza. This objection has not proved of any importance. In an extremely sudden summer shower it might require quick work on the part of the nurses.

In addition to the wide piazzas at the front and a narrow piazza at the back, there is at each end of the ward a large sun room which may be used as a play room by convalescents, or

may be used in bad weather for out-door treatment of delicate children.

Limitation of contagious disease is one of the problems which constantly confronts the administrators of a children's hospital. Our experience in the old building abundantly proved the need of limiting the size of the open wards. It was early concluded that no ward should contain more than ten beds, and that for each ten beds there should be one isolation room. The building of glass partitions between the beds was considered, but was not adopted. If children are up and walking about the value of the partition must be slight. The partitions do two things: First, they prevent direct contact between children in adjoining beds, but if the children are kept recumbent direct contact is impossible even without partitions. The second object of the partitions is to prevent attendants from carrying infection from patient to patient. The partition renders this relatively difficult, and serves as a reminder to the forgetful or careless. It is felt that rigid discipline and careful training will serve the same purpose.

The hospital has been in use now for eight months. The results in the limitation of contagion have been gratifying. The most trying experience so far has been with vulvo-vaginitis, which is without any question practically invariably carried from patient to patient by the hands of careless attendants or by any unclean utensil which comes in contact with the patients, including wash cloths, towels, napkins, diapers, thermometers, syringes, bed pans, and all bed and body clothing. The experience of this hospital has repeatedly shown that this disease can be completely checked by rigid care.

The isolation rooms have proved of great value. Any patient may at once be transferred to this room pending a decision on the question of contagion. In case quarantine is necessary the small number involved does not for long materially affect the efficiency of the hospital.

As a matter of economy in construction, in space and in administration, each ward was made double, each half complete in itself, and each half the exact duplicate of the other.

The desk for the head nurse is placed in the center of the lobby between the two ward units. From her chair she can

see every bed in each ward unit, the two sun parlors, the two isolation rooms, each diet kitchen, and the passage of persons to and fro from the service portions of the ward. Thus everything goes on directly under the eye of the head nurse, and at night everything passes directly under the supervision of the night nurse. Thus the work is simplified as much as possible.

In case it is necessary to isolate either half of a ward it can be entered from out of doors and access cut off entirely from the main corridor. And as before stated, as each half of a ward is complete in itself perfect isolation is possible.

The greatest possible care is taken to prevent the admission of children with or exposed to contagion. The parents are questioned carefully. The daily reports of the Board of Health are posted in the admitting rooms. The small examining and bath rooms give opportunity for thorough examination. If contagious disease breaks out in a ward the physician in charge of contagious diseases at once assumes control, acting of course in conjunction with the visiting physician or surgeon.

The *operating rooms* are in a special building. At one end of this is an amphitheatre seating 83, with a separate students' entrance from outside. This amphitheatre is planned rather for lectures and demonstrations than for ordinary operations. It is equipped with a lantern, and can be darkened easily by electrically controlled shades. At the same time it is amply equipped for any surgical operation should it be desirable to demonstrate anything before a large company.

Ordinarily all the operating is done in four smaller rooms, designed especially to give students a good view of what is being done. Low galleries at a height of six feet and four inches above the floor are placed at the sides of the rooms. In each of these galleries six persons may sit, and at least six may stand and look over the shoulders of those sitting. Thus twenty-four persons may look almost directly down upon the field of operation and be only a few feet away. Large screens of plate glass placed at an angle in front of the seats prevent dirt from passing down on to the tables or patient. The front walls of these balconies are solid up to the height of the knee below the glass screens. A hand rail protects the glass. One of these operating rooms is used for plaster of Paris work. One is isolated for

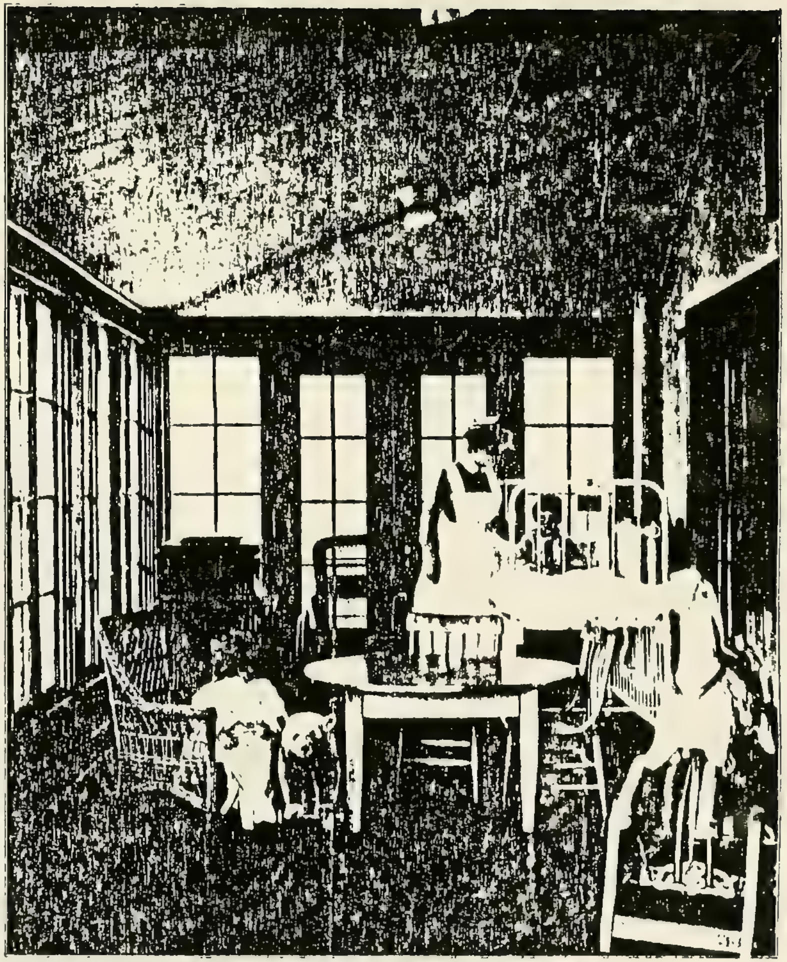
F/K 529

operations in septic cases. Near the operating rooms are the necessary dressing rooms, etherizing and recovery rooms, supply, instrument and sterilizing rooms.

On the second floor of the surgical building are the quarters for the male help, and a photograph room.

On the lower floor below the operating rooms and on a level with the amphitheatre floor are the morgue, and the laboratories for the visiting pathologist, bacteriologist and chemist.

The future growth of the hospital will come at first through the building of two new wards and the addition of another story to the two one-story wards already built. These additions will provide one hundred and twenty ward beds, making two hundred and fifty in all in the pavilion wards. The location of these wards is already determined. There is additional ground on which may be built another pavilion ward, a ward for private patients, or a contagious ward, as may in the future seem best.



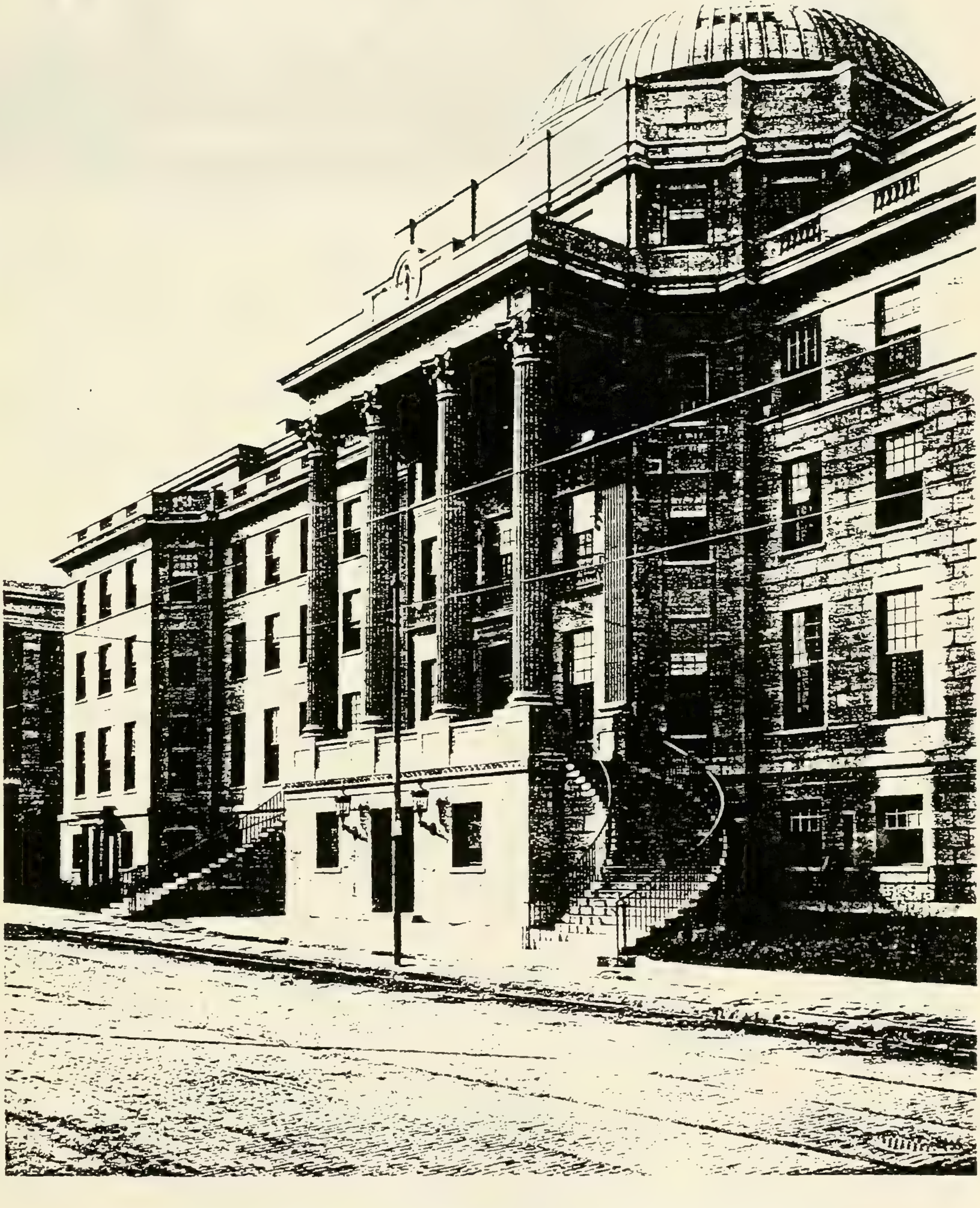
WARD SOLARIUM

FROM: The Children's Hospital,
46th Annual Report for 1914.

F/R 529

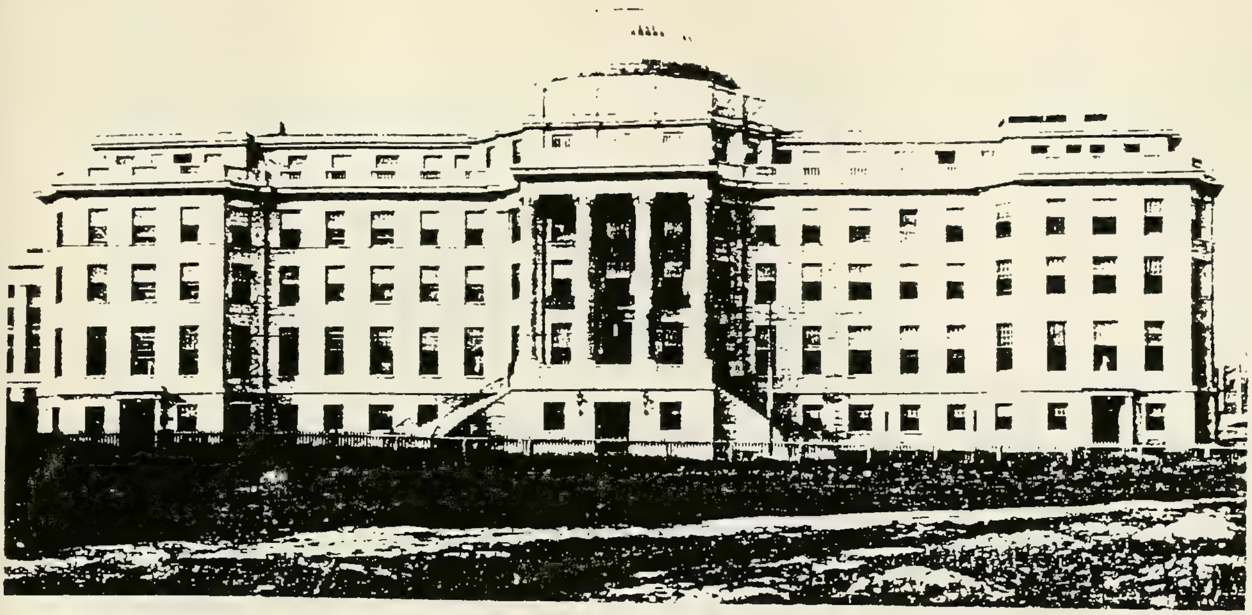
THE AMERICAN ARCHITECT

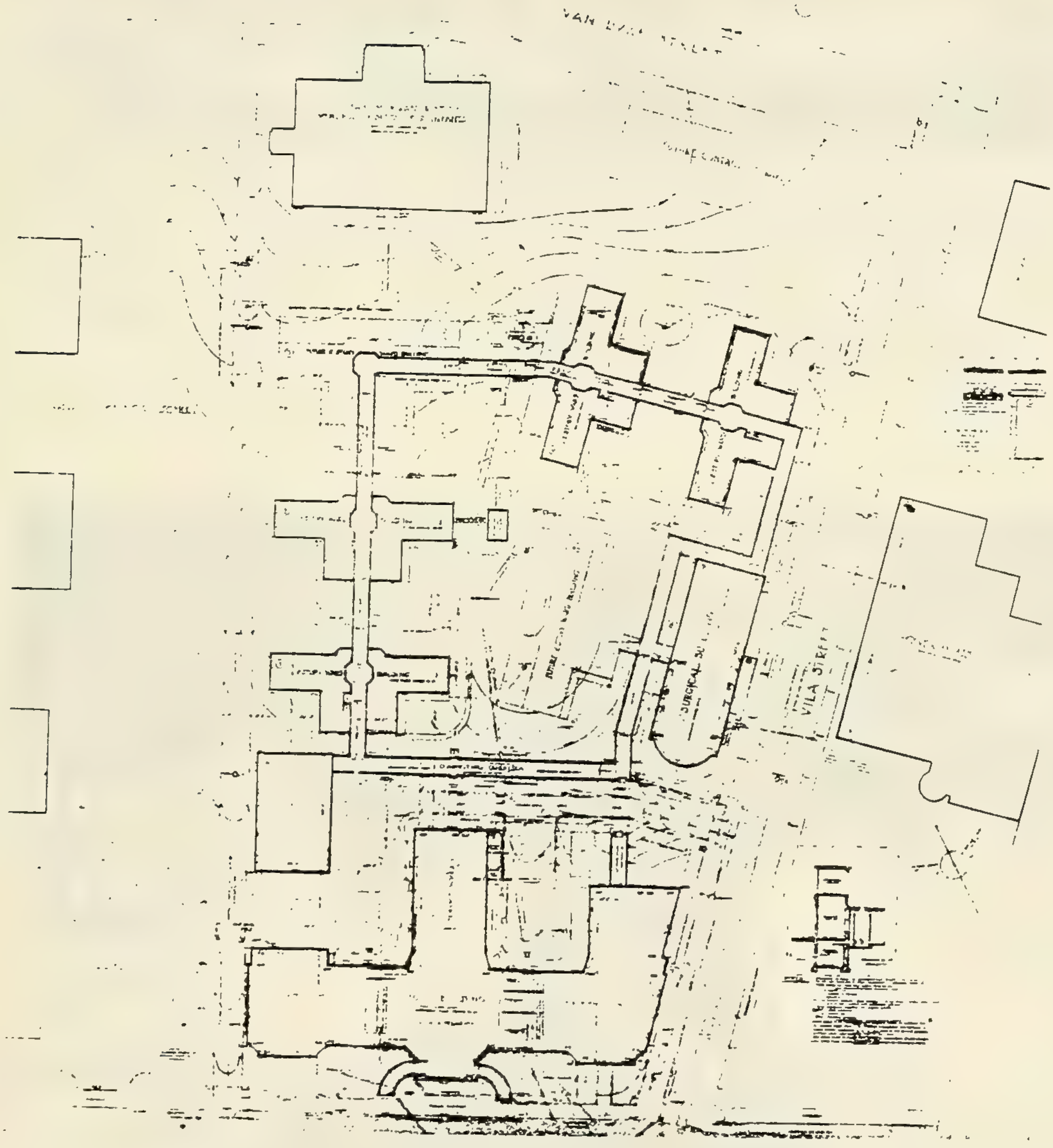
VOL. CVI. NO. 2026 OCTOBER 21, 1914



CHILDREN'S HOSPITAL, BOSTON, MASS.

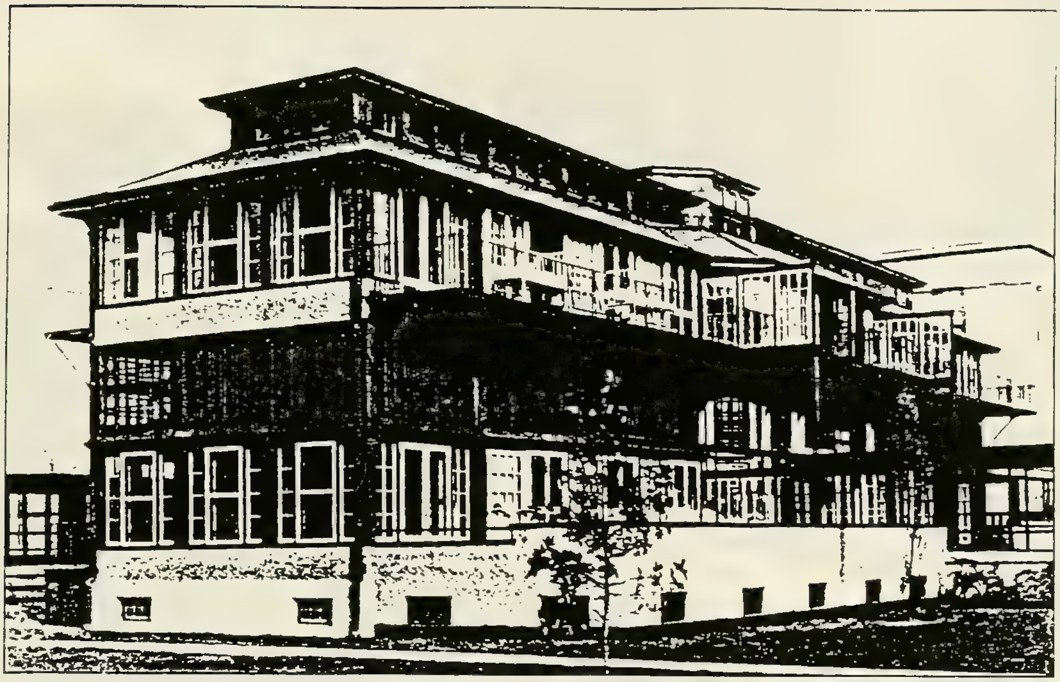
[illegible]





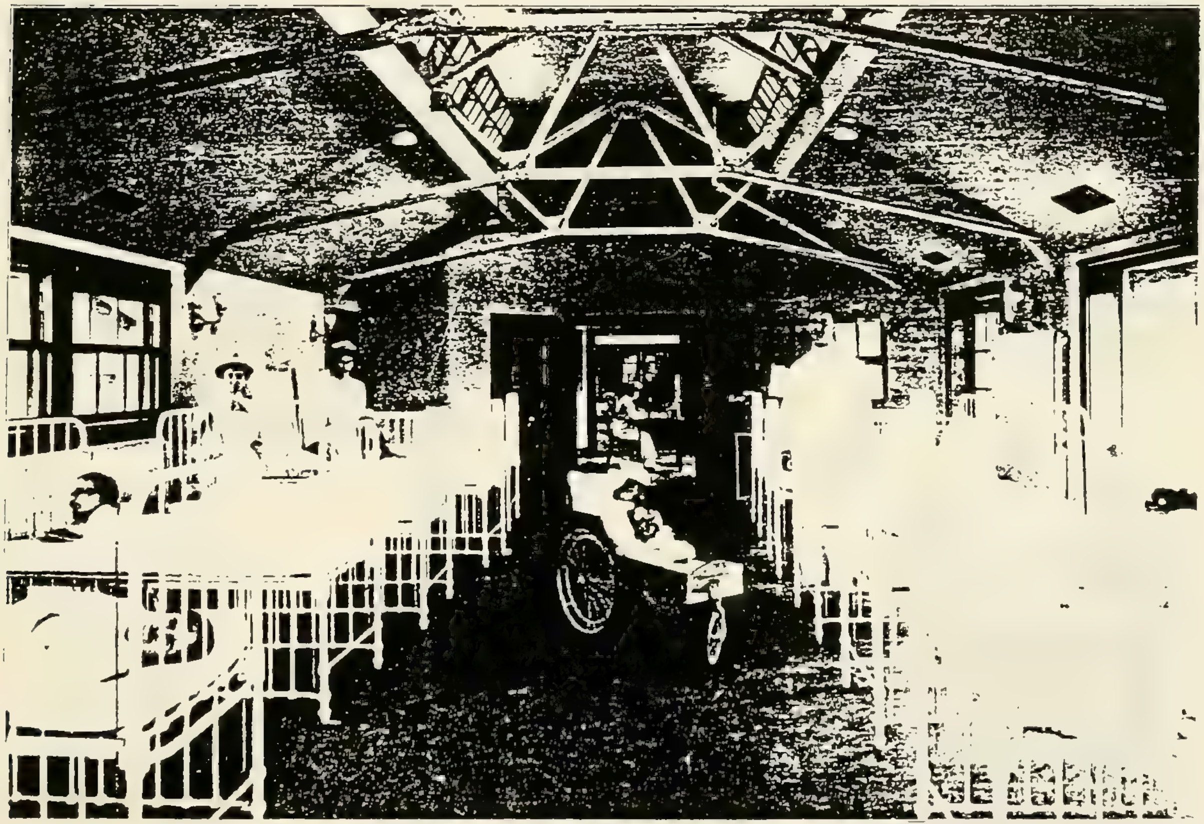
CHILDREN'S HOSPITAL, BOSTON, MASS.

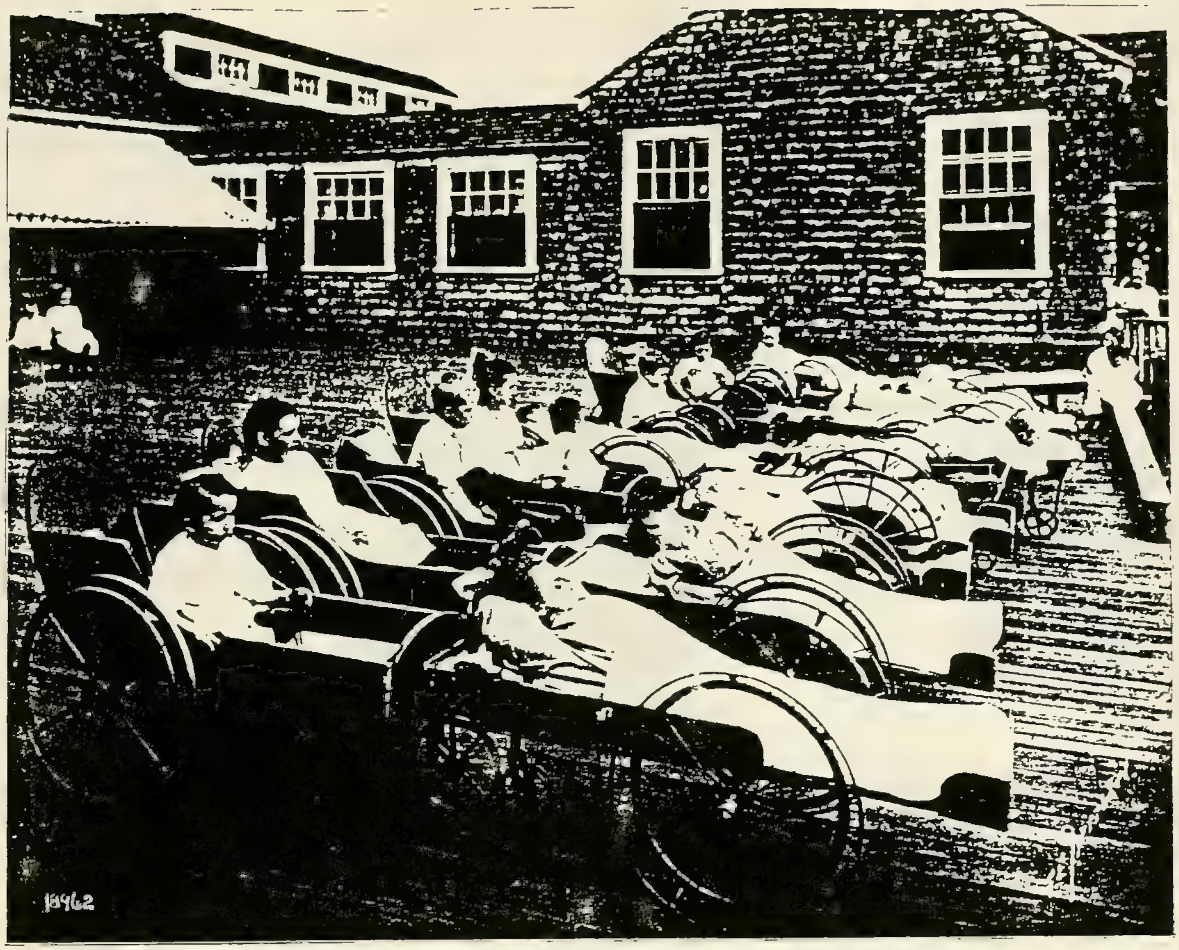
MESSRS SHEPLEY, RUTAN & COOLIDGE, *ARCHITECTS*



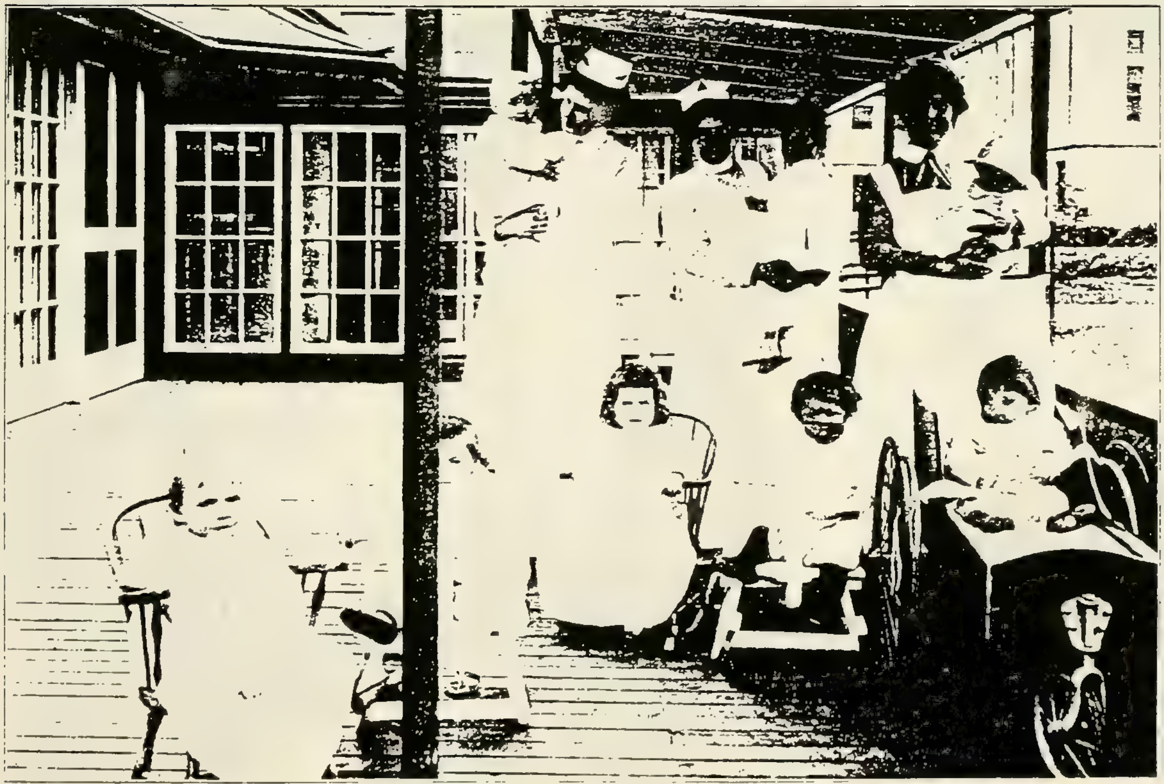
TWO-STORY WARD BUILDING

From: S.P.N.E.A. Files: Children's Hospital (Photo-mechanical reproductions)

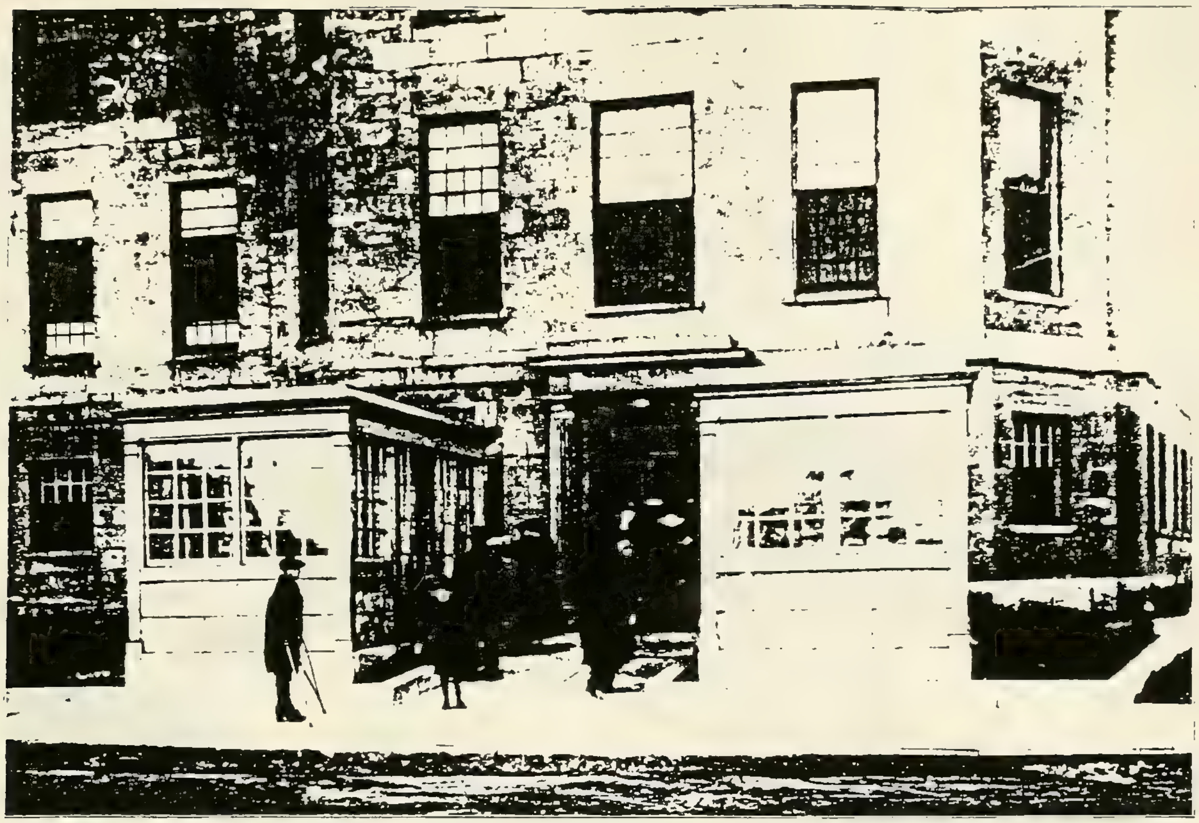




From: S.P.N.E.A. Files: Children's Hospital
(photo mechanical reproductions)

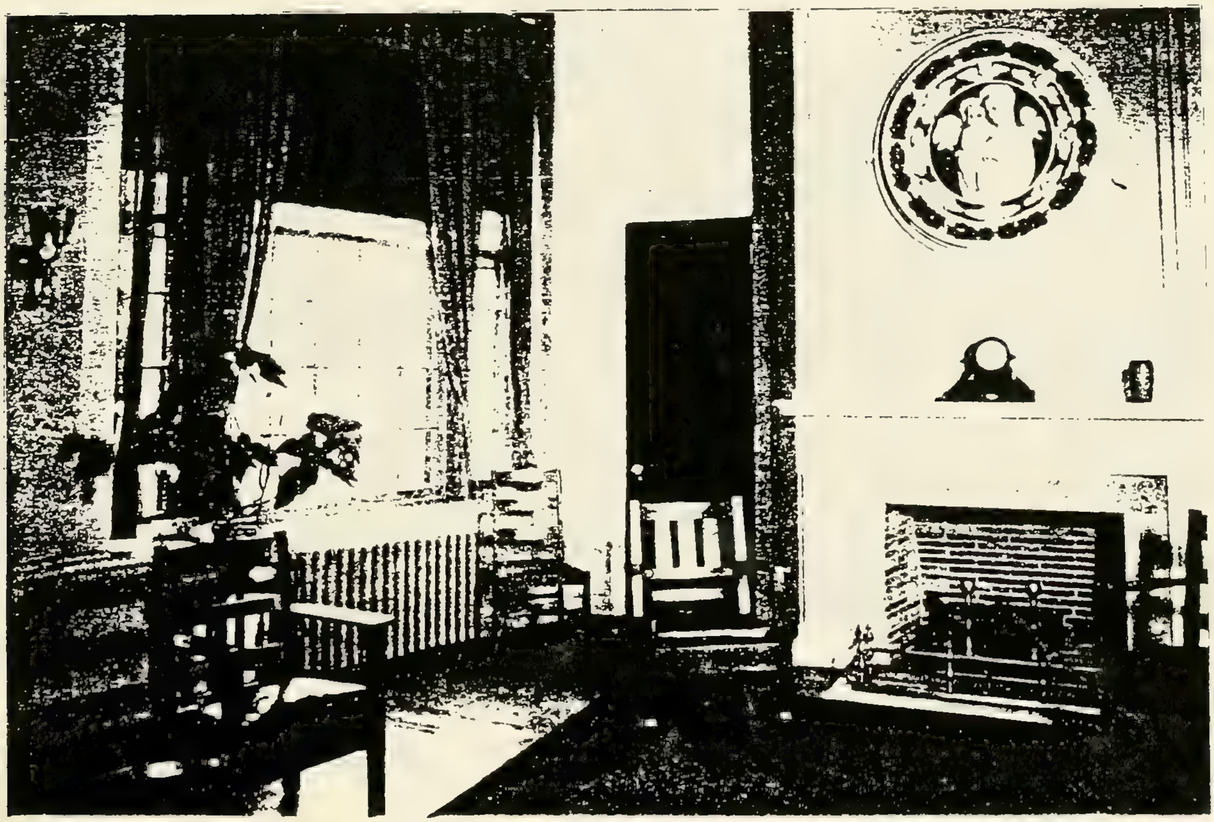


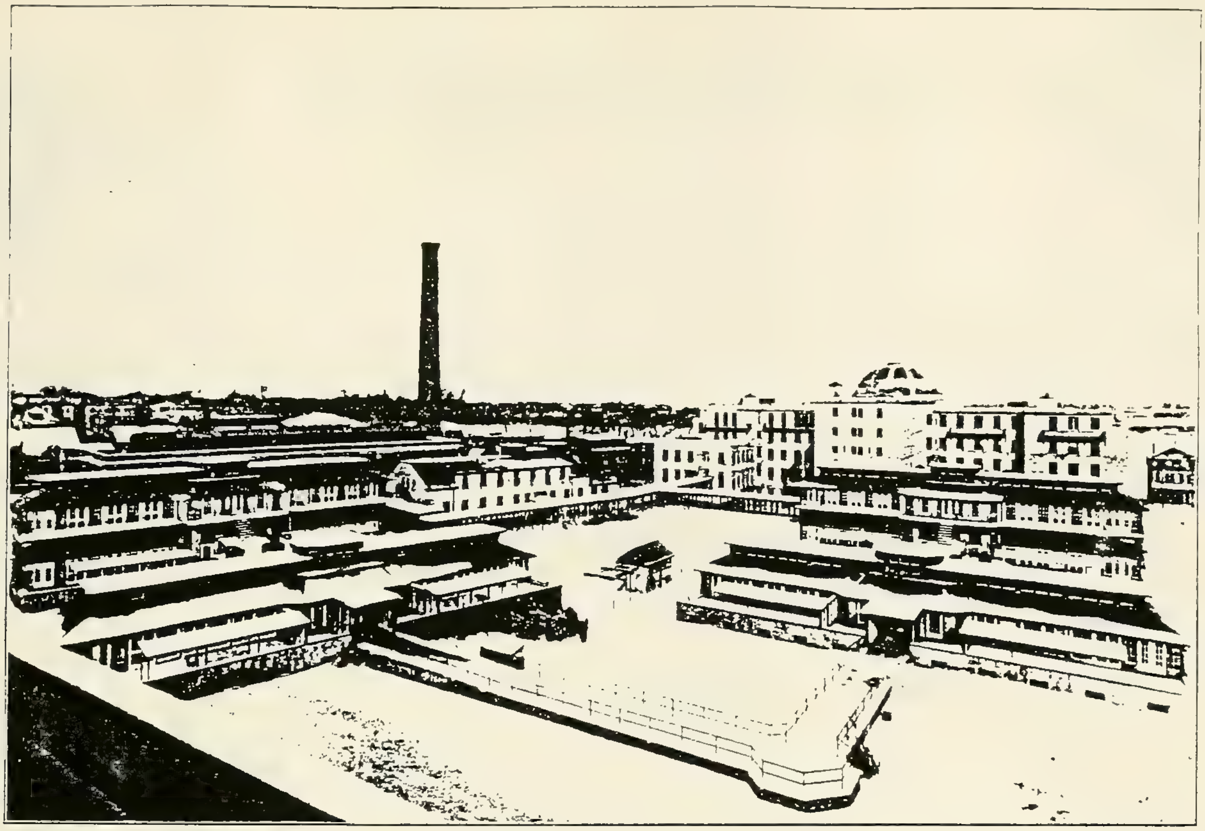
F/K 529



OUT-PATIENTS COMING TO THE HOSPITAL

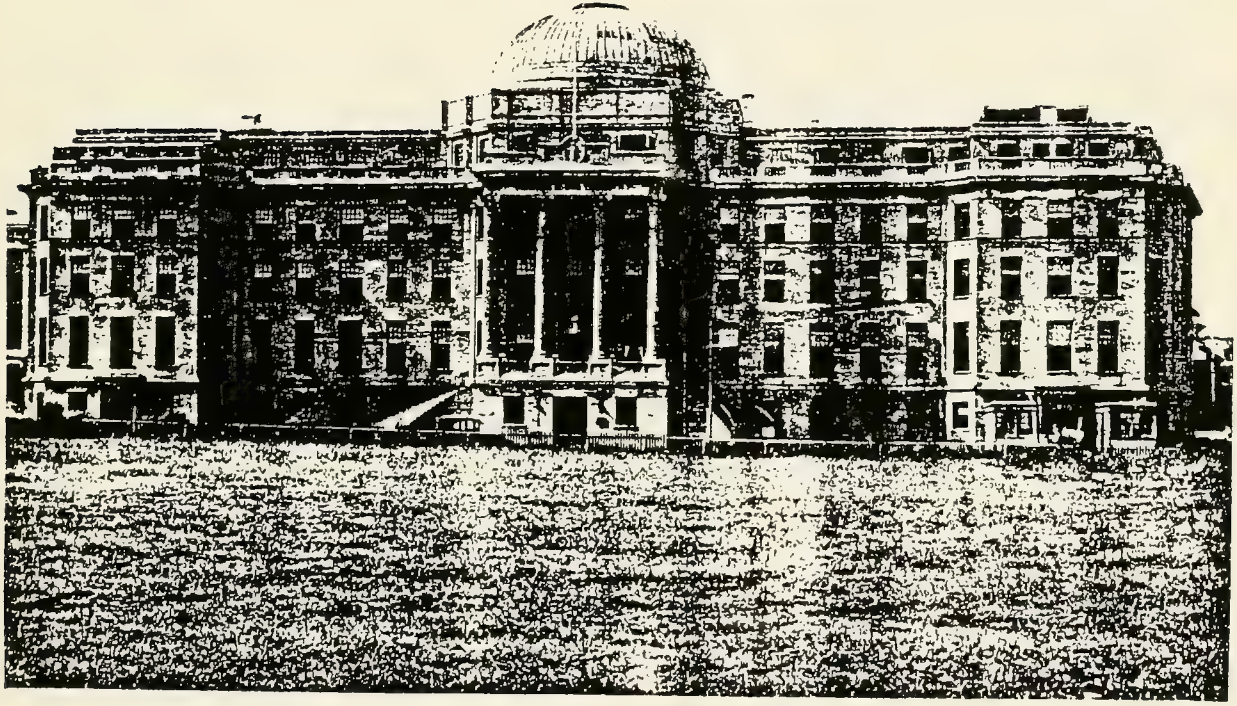
From: S.P.N.E.A. Files: Children's Hospital
(photomechanical repros.)





WARD PAVILIONS, SHOWING CONNECTING CORRIDOR AND REAR OF ADMINISTRATION BUILDING

From: S.P.N.E.A. Children's Hospital (photomecanical reproductions)



ADMINISTRATION BUILDING, NURSES' HOME, AND OUT PATIENT DEPARTMENT OF THE CHILDREN'S HOSPITAL

From: Children's Hospital, 51st Annual Report, for 1919.

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

MICHAEL S. DUKAKIS
GOVERNOR

JOHN DEVILLARS
SECRETARY

January 25, 1990

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS ON THE ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : Brigham & Women's Clinical Support Facility
PROJECT LOCATION : Boston
EOEA NUMBER : 8063
PROJECT PROPONENT : Brigham & Women's Hospital
DATE NOTICED IN MONITOR : December 26, 1989

Pursuant to the Massachusetts Environmental Policy Act (G.L.,c.30,s.61-62H) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that the above project does not require the preparation of an Environmental Impact Report.

Review of the project found three potentially significant issues, traffic, sewage flows and historic structures. The traffic issues included pedestrians, auto and public transit. The project is expected to generate approximately 800 new vehicle trips a day. However, the proponent is committed to reducing the use of the automobile by both employees and patients by, for example, increasing parking fees and subsidizing the cost of public transportation for its employees. As a result, I find that the traffic impacts of this project will be relatively minor.

In addition, a study for the Longwood Medical Area analyzed 54 improvement strategies and recommended 35. Consultants for the proponent have indicated that 17 of these recommendations are undergoing some phase of implementation now. One is indicated as unlikely at this time. All of the recommendations are considered for immediate and 5-year action. Enclosed is a copy of the 35 elements annotated by the consultants so as to indicate the responsible party or the status of negotiations. I have also been provided a copy of the information given to prospective patients and have reviewed the information on public transportation. The proponents have agreed to add a two-sided public transit sheet to the package to assist those not familiar

100 CAMBRIDGE STREET BOSTON, MA 02202 (617) 727-9800

100% RECYCLED PAPER

with the public transit in the neighborhood. The sheet will identify connecting transit routes from the Boston area for more remote patients and will include an updated transit map.

I expect that mitigation for the new sewer flows will be required by both city and state agencies. The new flows are only in the range of 23,000 gpd. I expect that the mitigation will be in the form of CSO reductions or inflow and infiltration reductions. I also understand that the proponent has met with the Boston Water and Sewer Commission to discuss the issues identified in that agency's comments.

The Tackaberry Building, to be demolished, was not found to be historic by either the city and state agencies.

January 25, 1990
Date

John DeVillars, Secretary

Enclosure : Table 8 - Recommended Traffic Improvements

Comments received : EOTC - 1/17/90
BRA - 1/19/90
MAPC - 1/18/90
BW&SC - 1/17/90
MDC - 1/16/90
MWRA - 1/12/90

JD/DES/ds

RECOMMENDED IMPROVEMENTS

No.	Description	Long/ Short Term	Primary Agencies Involved*	Potential Funding Sources	Capital Cost ($000)	
ROADWAY CONSTRUCTION STRATEGIES						
A1**	Modify Intersection of Fenway and Avenue Louis Pasteur	Long	MDC/BTD	MDC/City	100	
A2**	Connect Parking Facilities to Avenue Louis Pasteur	Long	BSD/EC/BRA/BTD/ BIH/CH/HMS/MASCO	Developer(s)	110	
A3	Widen Longwood Avenue Between Binney Street and Brookline Avenue	Long	BTD	MCA Site Developer	220	
A8	Modify the Sears Rotary: Close its Eastern Loop	Short	MDC	MDC/Sears Developer	30	Sears developer JMB/Urban has committed to funding rotary improvements
	Modify the Sears Rotary: Signalize the Riverway Merge	Short	MDC	MDC/Sears Developer	55	
OTHER ROADWAY IMPROVEMENTS						
B1-B8	Reallocate Available Roadway Width and Green Signal Time	Short	BTD	City	110	Longwood + Brookline Ave meter removals are under discussion with BTD.
B9	Enhance the Effectiveness of the Longwood Avenue/Riverway Signal	Short	MDC/BTB	MDC/Town of Brookline	200	MASCO has met with MDC regarding its plan and agreement was reached. Awaits capital funding.
CIRCULATION CHANGES						
C1**	Riverway/Brookline Avenue One-Way Pair	Long	BTD/MDC	City/MDC/Sears Developer	400***	Unlikely - Long term plan
C2	Northbound Left-Turn Restriction at Huntington and Longwood Avenues	Short	BTD	City	5	
C8**	Make Pilgrim Road Two-Way From Joslin Place to Deaconess Garage	Long	BTD/NEDH	City	15	Likely with Deaconess project
TRAFFIC REDUCTION STRATEGIES						
D1**	Raise Parking Fees for Employees	Short	MASCO	Results in Cost Savings		Parking fees increase annually
D2	Provide and Market Transit Subsidies for Employees	Short	MASCO	Parking Subsidy Reductions****		Most major institutions now subsidize 25%
D4	Ridesharing Program	Short	MASCO/CARAVAN	Parking Subsidy Reductions/State		Underway - MASCO TM
D5	"Alternatives to Driving Alone to the LMA" Campaign	Short	MASCO/CARAVAN	Parking Subsidy Reductions/State		Underway - MASCO TM
D6	Improve MBTA Service on the Riverside and Arborway Lines	Short	MBTA	MBTA		
D7	Improve MBTA Service to Ruggles Station and Roxbury-Dorchester (Extend MBTA Bus Route 19 into the LMA)	Short	MBTA	No Cost		MBTA is considering a number of route changes now in light of its operating deficit
D11	Coordinate a Voluntary Staggered Work Hours Program	Long	MASCO	Parking Subsidy Reductions		Part of the TMO

---

* See following page.

** These recommendations will require further study before receiving the endorsement of MASCO and its member institutions.

*** Some of this cost is to create parkland where roadway now exists.

**** Parking subsidy reductions represent institutional funds.

1774/388/wpr-GF1

TABLE 8 (Continued)
RECOMMENDED IMPROVEMENTS

No.	Description	Long/ Short Term	Primary Agencies Involved*	Potential Funding Sources
MANAGEMENT STRATEGIES				
E1**	Parking Management	Short	MASCO	Parking Subsidy Reductions***
E2	Improve Enforcement of Traffic and Parking Regulations	Short	BTD/BPD	City/MDC | Under discussion with BTD as part of meter removals
E3	Construction Management	Short	BTD	Developers | Underway, part of every development projec
E4	Restrain Street Closures	Short	BTD	No Cost
E5	Limit On-Street Loading	Short	MASCO	Institutions | Part of all new projects
E6	Detail Traffic Control Officers at LMA Intersections	Short	MDC/BTD	MDC/City | Under discussion as part of Sears project
E9	Assessments for LMA Transportation Improvements	Short	MASCO	Generates Funds
PEDESTRIAN ACCESS IMPROVEMENTS				
F1	Install Stop Sign at Avenue Louis Pasteur and Longwood Avenue	Short	BTD	City
F2	Provide Security to MBTA Users	Short	MASCO	MASCO/Institutions | Areawide security has been increas
F3	Improve Streetscape Amenities	Short	MASCO	MASCO/Institutions/City | Continuing program by MASCO
F4	Improve Connection to Longwood Station	Short	MDC/DEM/BPRD/BCC	State Emerald Necklace Funds
SITE DESIGN CONSIDERATIONS				
G1	Keep Garage Queues and Drop-Off Driveway Queues Off Streets	Short	BTD/MASCO	Developers | Part of each development project. City is ensuring this.

*	BCC	- Brookline Conservation Commission
	BIH	- Beth Israel Hospital
	BPD	- Boston Police Department
	BPRD	- Boston Parks and Recreation Department
	BRA	- Boston Redevelopment Authority
	BSD	- Boston School Department
	BTB	- Brookline Transportation Board
	BTD	- Boston Transportation Department
	CH	- Children's Hospital
	DEM	- Mass. Department of Environmental Management
	EC	- Emmanuel College
	HMS	- Harvard Medical School
	MASCO	- Medical Area Service Corporation
	MBTA	- Mass. Bay Transportation Authority
	MDC	- Metropolitan District Commission
	NEDH	- New England Deaconess Hospital

** These recommendations will require further study before receiving the endorsement of MASCO and its member institutions.

*** Parking subsidy reductions represent institutional funds.

The Commonwealth of Massachusetts
Executive Office of Transportation & Construction
Office of the Secretary
10 Park Plaza Room 3710
Boston MA 02116-3969
Telephone 973-7000
TDD (617) 973-7306
Telefax (617) 723-6454

Michael S. Dukakis
Governor

Frederick P. Salvucci
Secretary
and
MBTA Chairman

DS

RECEIVED
JAN 16 1990
MEPA

(X) E.N.F. ( ) DRAFT E.I.R. ( ) FINAL E.I.R. NO. 8063

DATE: 12-22-89 DATE RECEIVED: 12-22-89 COMMENTS DUE: 1-16-90

TOWN/CITY: BOSTON, MASSACHUSETTS

PROJECT PROPONENT:
BRIGHAM & WOMEN'S HOSPITAL
75 FRANCIS STREET
BOSTON, MASSACHUSETTS

PROJECT DESCRIPTION: BRIGHAM & WOMEN'S CLINICAL SUPPORT FACILITY, 66-72 SHATTUCK STREET, BOSTON, MASSACHUSETTS. The proposed is the construction of an 181,782 S.F., eight story Clinical Support Facility located in Boston's Longwood Medical Area. The project site is bounded by Huntington Avenue and Binney, Francis and Shattuck Streets. The proposed facility will primarily house obstetrical services, inclusing labor and delivery unit, neonatal intensive care unit, ancillary offices and support staff areas.

(✓) COMMENTS (SEE ATTACHED) ( ) NO COMMENTS

DATE: 1-17-90

FREDERICK P. SALVUCCI
SECRETARY

The Commonwealth of Massachusetts
Executive Office of Transportation & Construction
Office of the Secretary
10 Park Plaza, Room 3510
Boston, MA 02116-3969
Telephone 973-7000
TDD (617) 973-7306
Telefax (617) 523-6454

Michael S. Dukakis
Governor
Frederick P. Salvucci
Secretary
and
M.B.T.A. Chairman

RECEIVED
JAN 16 1990
MEPA

EOTC COMMENTS ON THE ENF FOR BRIGHAM & WOMEN'S HOSPITAL
BOSTON, MA
EOEA #8063

EOTC has reviewed the ENF for the Brigham & Women's Clinical Support Facility in Boston, MA. The proposed facility would consist of a 181,782 square foot, eight-story building which would house obstetrical services, a neonatal intensive care unit, ancillary offices and an in-house hotel for patients' families. The project site, located on Brigham & Women's main campus in the Longwood Medical Area, is bounded by Binney Street and Francis Street.

Although EOTC does not believe that an EIR is required for this project, EOTC is concerned with the reliance upon roadway improvements as presented in the 1988 Longwood Medical Area transportation study and how these improvements would be implemented. EOTC comments on both the Beth Israel Hospital (DEIR #7406) and the East Quadrangle Research Facility (ENF #7943) stated similar concerns regarding proponent support of such improvements yet no commitment to implement. Brigham & Women's Hospital mentions this same Medical Area Service Corporation (MASCO) study and recommends that such improvements be implemented and states that police officer control at the Francis Street/Vining Street intersection "should be considered". However, no commitment has been provided as to who would actually carry out these improvements. Supplemental information should be provided or an appropriate context established whereby this commitment and a timetable for implementation can be detailed.

EOTC is pleased with the proponent's discussion of transportation demand reduction strategies. The proponent has provided a commitment to implement the following programs: increase employee parking fees, establish a Longwood Medical Area parking committee, provide preferential parking for

vanpool/carpools, provide transit subsidies for employees, support MASCO ridesharing and promote flexible work schedules. The successful implementation of these strategies would do much to both reduce parking demand and minimize daily vehicle trips. The proponent should continue to work with MASCO in the implementation of these and other measures. In November of 1989, MASCO received a grant from the MBTA to establish a Longwood Medical Area TMO. EOTC assumes that the proponent will be an active participant in this TMO.

1-12-90
mtv

BOSTON
REDEVELOPMENT
AUTHORITY

Raymond L. Flynn
Mayor

Stephen Coyle
Director

One City Hall Square
Boston, MA 02201
617) 722-4300

D>

RECEIVED
JAN 19 1990
MEPA

1 19. 90

Secretary John P. DeVillars
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

ATTN: MEPA Unit

RE: EOEA #8063: Brigham & Women's Hospital Clinical Support Facility

Dear Secretary DeVillars:

Pursuant to regulations implementing M.G.L., Chapter 30, Sections 62-62H, the Boston Redevelopment Authority has reviewed the above-referenced Environmental Nofification Form and submits the following comments:

The proposed project involves the construction by Brigham & Women's Hospital of an approximately 182,000 sq. ft. Clinical Support Facility on the Hospital's campus on Shattuck Street in the Longwood Medical Area of Boston. The proposed eight-story structure is to house facilities for obstetrical services, including a labor and delivery unit, a neonatal intensive care unit, ancillary offices and support staff areas, and an in-house hotel of 48 rooms for patients' families. The new building will replace an existing building on site. The majority of the services already are located elsewhere on campus in inadequate facilities.

The plans for the Clinical Support Facility are incorporated into the Brigham and Women's Hospital Institutional Master Plan, which is on file with the City of Boston and the Boston Redevelopment Authority. The Authority presently is reviewing this Plan, and a community review process will be undertaken. Following a thorough community review, the Plan will be presented to our Board.

The environmental impacts of the proposed facility are expected to be minimal and limited primarily to the construction period. Because of the project's location within the Medical Center area and adjacent to existing hospital facilities, special precautions must be taken during demolition and construction to minimize to the greatest extent feasible noise and pollutant generation. Appropriate mitigation measures must be implemented to ensure that these impacts are controlled. The safety of pedestrians, including patients and visitors, must be maintained at all times. Prior to demolition of the existing building, asbestos material must be removed in accordance with State and EPA requirements.

In the long term, the project will generate the need for approximately 117 parking spaces. Brigham and Women's will not be providing any new parking as part of this project. However, the Hospital has indicated that this need is expected to be satisfied by freeing up existing spaces through encouragement of greater dependency on public transportation (the Hospital will provide a 20% subsidy of transit passes), ridesharing, and increasing parking fees in their present facilities.

Based on the above, we do not believe that an Environmental Impact Report need be required for this project.

Sincerely,

Paul Reavis
Assistant Director for
Engineering and Design Services

PR:RM/lmc

cc: Nicholas J. Johnson
V.P. - Administration
Brigham and Women's Hospital

BOSTON
REDEVELOPMENT
AUTHORITY

Raymond L. Flynn
Mayor

Stephen Coyle
Director

One City Hall Square
Boston, MA 02201
617 722-4300

DRAFT

Secretary John P. DeVillars
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

ATTN: MEPA Unit

RE: EOEA #8063: Brigham & Women's Hospital Clinical Support Facility

Dear Secretary DeVillars:

Pursuant to regulations implementing M.G.L., Chapter 30, Sections 62-62H, the Boston Redevelopment Authority has reviewed the above-referenced Environmental Nofification Form and submits the following comments:

The proposed project involves the construction by Brigham & Women's Hospital of an approximately 182,000 sq. ft. Clinical Support Facility on the Hospital's campus on Shattuck Street in the Longwood Medical Area of Boston. The proposed eight-story structure is to house facilities for obstetrical services, including a labor and delivery unit, a neonatal intensive care unit, ancillary offices and support staff areas, and an in-house hotel of 48 rooms for patients' families. The new building will replace an existing building on site. The majority of the services already are located elsewhere on campus in inadequate facilities.

The plans for the Clinical Support Facility are incorporated into the Brigham and Women's Hospital Institutional Master Plan, which is on file with the City of Boston and the Boston Redevelopment Authority. The Authority presently is reviewing this Plan, and a community review process will be undertaken. Following a thorough community review, the Plan will be presented to our Board.

The environmental impacts of the proposed facility are expected to be minimal and limited primarily to the construction period. Because of the project's location within the Medical Center area and adjacent to existing hospital facilities, special precautions must be taken during demolition and construction to minimize to the greatest extent feasible noise and pollutant generation. Appropriate mitigation measures must be implemented to ensure that these impacts are controlled. The safety of pedestrians, including patients and visitors, must be maintained at all times. Prior to demolition of the existing building, asbestos material must be removed in accordance with State and EPA requirements.

DRAFT

In the long term, the project will generate the need for approximately 117 parking spaces. Brigham and Women's will not be providing any new parking as part of this project. However, the Hospital has indicated that this need is expected to be satisfied by freeing up existing spaces through encouragement of greater dependency on public transportation (the Hospital will provide a 20% subsidy of transit passes), ridesharing, and increasing parking fees in their present facilities.

Based on the above, we do not believe that an Environmental Impact Report need be required for this project.

Sincerely,

Paul Reavis
Assistant Director for
Engineering and Design Services

PR:RM/lmc

cc: Nicholas J. Johnson
V.P. - Administration
Brigham and Women's Hospital

Metropolitan Area Planning Council
MAPC
60 Temple Place, Boston, Massachusetts, 02111•617-451-2770

serving 101 cities and towns in Metropolitan Boston

RECEIVED
JAN 18 1990
MEPA

January 12, 1990

The Honorable John DeVillars, Secretary
Executive Office of Environmental Affairs
MEPA Unit
100 Cambridge Street
Boston, MA 02202

Project Identification

Project Name: Clinical Support Facility
EOEA#: 8063
Project Proponent: Brigham & Women's Hospital
MAPC: ENF-90-32
Location: Boston
Received: 12/28/89

Dear Secretary DeVillars:

In accordance with the provisions of Chapter 30, Section 62, of the Massachusetts General Laws, the Council has reviewed the Environmental Notification Form identified above and offers the following comments:

1. x Environmental Notification Form adequate; no Environmental Impact Report should be required

2. ____ Before a determination can be made as to whether or not an Environmental Impact Report should be required, additional information should be provided on ( ) probable environmental impacts, ( ) alternatives to proposed action, and/or ( ) measures proposed to mitigate probable impacts.

3. ____ An Environmental Impact Report ( ) should be required, ( ) is categorically required.

4. x Additional comments are attached.

Sincerely,

David C. Soule
Executive Director

DCS/PSB/mlm
cc: Richard Dimino, MAPC Rep., Boston
Paul Reavis, BRA
Mitchell L. Fischman, HMM Associates
Patrick Sampson Babineau, MAPC Staff

Frank E. Baxter, *President* Franklin G. Ching, *Vice-President* Marjorie A. Davis, *Secretary* Martha K. Gjesteby, *Treasurer*
Executive Director: David C. Soule

ADDITIONAL COMMENTS

Traffic

The proposed Clinical Support facility will increase an existing building footprint by 146,182 square feet and will generate an additional 826 daily trips to and from the Brigham and Women's Hospital site. Yet the applicant does not propose to provide any additional on-site parking spaces. The applicant, however, proposes to encourage employees to use mass transit and to utilize nearby public parking lots. It is uncertain from the submitted ENF whether the applicant is required to provide on-site parking for the proposed increase and whether the applicant must seek a variance if the required parking cannot be met. In any case, the MAPC Staff strongly urges the applicant to work with the local Mission Hill Planning and Zoning Committee to mitigate any potential neighborhood parking and traffic problems related to this project.

Scale and Location

The proposed facility will be constructed within the footprint of an existing building on the Brigham and Women's Hospital site. The proposed eight story structure will not be any larger or higher than surrounding buildings and will not pose shadow or wind problems to nearby structures.

Noise and Air Pollution

The proposed facility will be connected with existing City water and sewerage lines. Some noise will be generated during construction and potential air pollution could result from this construction. Again, the MAPC Staff urges the applicant to work closely with the Mission Hill Planning and Zoning Committee to mitigate whenever possible these potential construction phrase problems.

Boston Water and
Sewer Commission

425 Summer Street
Boston, MA 02210-1700
617-330-9400
Fax 617-330-5167

RECEIVED
JAN 17 1990
MEPA

January 12, 1990

Secretary John P. DeVillars
Executive Office of Environmental Affairs
20th Floor
100 Cambridge Street
Boston, MA 02202

Attn: MEPA Unit

Re: Brigham & Women's Hospital, Clinical Support Facility ENF, # 8003

Dear Secretary DeVillars:

The Boston Water and Sewer Commission has reviewed the Environmental Notification Form for the proposed clinical support facility at Brigham & Women's Hospital in the Longwood Medical Area section of Boston.

This project consists of the construction of 181,782 square feet of clinical support space, ancillary offices and an in-house hotel for patients' families. The new facility will replace the existing Tackaberry Building which is 35,600 square feet in size.

Total water demand for the new facility is estimated at 25,300 gallons per day. Sanitary flow is estimated at 23,000 gallons per day.

The Commission comments on the proposed project are as follows:

1. In the ENF summary there is reference to "minimal water issues". The Commission requests specific information regarding these issues.

2. Calculations of water demand should include a separate calculation for air conditioning make up water.

3. The Commission's own calculation of water demand and sanitary flow equals 26,950 gallons per day, based on Title 5 standards. The estimate provided by the proponent is less. The reason for this discrepency should be provided.

4. Plans should be provided which show the existing water, sewer and drainage systems serving the site. Each system should be assessed for its capacity to handle the increases in flow.

Plans should also show existing and proposed water, sewage and drain connections and service connections to be abandoned, if any.

5. A comparison of existing water consumption and sanitary flow at the Tackaberry building with the anticipated flows of the proposed facility should be provided.

6. Please let us know if steam condensate will be returned to the Medical Area Total Energy Plant or if it will be discharged to the sewer.

Thank you for the opportunity to comment on the ENF for the the Brigham & Women's proposed clinical support facility.

Yours truly,

John P. Sullivan, Jr. P.E.
Chief Engineer

cc: R. Mertens, BRA
S. Shea, BWSC
N. Johnson, BWH

AK

MASSACHUSETTS WATER RESOURCES AUTHORITY
Charlestown Navy Yard
100 First Avenue
Boston, Massachusetts 02129

Telephone:
(617) 242-6000

RECEIVED
JAN 1 2 1990
MEPA

Board of Directors
ohn P. DeVillars, Chairman
ohn J. Carroll
Robert J. Ciolek
Villiam A. Darity
orraine M. Downey
nthony V. Fletcher
Charles Lyons
oseph A. MacRitchie
Samuel G. Mygatt
homas E. Reilly, Jr.
Valter J. Ryan, Jr.

xecutive Director
aul F. Levy

January 12, 1990

John P. DeVillars, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Attention: MEPA Unit

RE: EOEA No. 8063 - Brigham and Women's Hospital ENF, Boston

Dear Secretary DeVillars:

Concerning the above-referenced Environmental Notification Form (ENF), we submit the following comments:

The proposed project will increase wastewater flows to the MWRA Sewer System and Deer Island Treatment Facility, which currently lack sufficient capacity to convey and treat wastewater flows without chronic surcharging and overflowing, especially during wet weather.

While the increase in wastewater flow of 23,000 gpd may not seem significant compared with the total flow to the sewer system and treatment plant, the cumulative flow from several new projects being constructed simultaneously is significant. All proponents of new projects are encouraged to minimize the flows from their projects. The proponent has indicated that the Massachusetts Plumbing Code will be adhered to. In addition, in order to minimize water use and wastewater flow, we suggest the following:

Heating and Cooling

The building heating and air conditioning should be air cooled rather than water cooled. Where water cooling is necessary, the system should be closed loop.

Sanitary Use

Restrooms should be equipped with water saving fixtures such as faucet aerators that use 2.0 gallons per minute or less and spring loaded or timer valves.

The Commonwealth of Massachusetts
Metropolitan District Commission
M. Ilyas Bhatti, Commissioner

20 Somerset Street
Boston, MA 02108
617-727-5114

The
Metropolitan Network
of Services

Parks

Beaches

Community Boating

Historic Sites

Recreational Facilities

Public Concerts

Trailside Museum

Boston Harbor Islands

Metropolitan Police

Flood Control

atershed Management

Pure Water Supply

uabbin, Wachusett and
Sudbury Reservoirs

Franklin Park and
Stone Memorial
Zoos

arkway, Boulevard and
Bridge System

Charles, Mystic and
Neponset Rivers

aver Brook, Blue Hills,
Elm Bank, Breakheart,
Middlesex Fells, and
ny Brook Reservations

RECEIVED
JAN 16 1990
MEPA

January 12, 1990

Ms. Janet McCabe, Assistant Secretary
Executive Office of Environmental Affairs
MEPA Unit
100 Cambridge Street - Room 2000
Boston, MA. 02202

RE: Brigham and Women's Hospital Support Facility; EOEA #8063

Dear Ms. McCabe:

The Metropolitan District Commission (MDC) is pleased to have this opportunity to comment on the above-referenced Environmental Notification Form (ENF).

Due to a lack of information presented in the ENF, the MDC requests that a Traffic Study which addresses the issues below be prepared either separately (if the Transporation Access Study is not adequate), or as part of an Environmental Impact Report. The following issues should be addressed:

TRAFFIC

The ENF states that a Transportation Access Plan is on file with the City of Boston. This study should have accompanied the ENF to allow reviewers to determine impacts.

The ENF states that there will be a total increase in traffic around the facility of 800 cars/day. The ENF does not address traffic impacts on Park Drive, the Riverway, the Jamaicaway, and the Fenway. The traffic study or EIR should address impacts to these historic parkways.

In general, this project is one of several that have been recently planned or will be planned for the Medical Service Area. While this project by itself, is significant for its traffic impacts, it becomes more significant when examined for its cumulative traffic impacts with such projects as Olmsted Plaza. The traffic study or EIR should address this issue.

Thank you for this opportunity to comment.

Sincerely,

M. ILYAS BHATTI
COMMISSIONER

MIB/dq

cc: K. Kirwin

APPENDIX C

Notice of Project Change Submission to Executive Office of Environmental Affairs, May 10, 1990 and Correspondence from Assistant Secretary, EOEA, July 23, 1990

HMM ASSOCIATES, INC.
ENGINEERS, ENVIRONMENTAL CONSULTANTS & PLANNERS

HMM Ref. No. 3774/ENV-2921

May 10, 1990

Mr. John DeVillars
Secretary
Executive Office of Environmental Affairs
100 Cambridge Street
Room 2000
Boston, MA 02202

ATTN: MEPA Unit

RE: Notice of Project Change
Brigham and Women's Hospital
Clinical Support Facility
EOEA #8063

Dear Secretary DeVillars:

Pursuant to 310 CMR 11.17(1) of the Massachusetts Environmental Policy Act (MEPA), Brigham and Women's Hospital (BWH) is notifying your Office of a project change to BWH's proposed Clinical Support Facility in Boston.

The BWH proposed facility was the subject of an Environmental Notification Form (ENF) filed with your Office on December 15, 1989. It was noticed in the Monitor on December 26, 1989. A Certificate of the Secretary was issued on January 25, 1990 determining that the proposed project did not require the preparation of an Environmental Impact Report.

1. Original ENF Project Description

In the ENF, BWH proposed to construct an 181,782 square foot, eight-story Clinical Support Facility primarily to house obstetrical services, including a labor and delivery unit, a neonatal intensive care unit, ancillary offices and support staff areas, and an in-house hotel for patients' families. The majority of these services are already located elsewhere on campus in facilities of insufficient size to accommodate present and anticipated demand. The Clinical Support Facility would also replace the 32,600 square foot Tackaberry Building, which is currently located on the site.

As with the existing Tackaberry Building, a walkway bridge would connect the building at Level 2 to The Children's Hospital; in addition, a connecting bridge would join the new building to the adjacent BWH patient tower. Total construction cost was approximately $48.5 million. Construction was expected to commence in March 1991 and be completed by mid-1993.

2. Proposed Project Change

In its ongoing program assessment, BWH has determined the need for additional space for medical faculty offices now located in overcrowded space in other locations within the BWH campus, and for new doctors and staff expected to be attracted to BWH. Therefore, the hospital now proposes one additional floor (approximately 21,000 gross square feet) to the proposed Clinical Support Facility. This will increase gross floor area from 181,782 to 202,700, and building height from 8 to 9 stories (from 125 feet to approximately 138 feet).

Construction of the Clinical Support Building will follow demolition of the existing buildings on the proposed site. Demolition is now scheduled to begin in mid-1991 with construction immediately thereafter and extending through early 1994.

This project change on a floor by floor program basis is presented in Table 1, and is summarized below:

- A hotel for inpatients' families and inpatient pre- and post-procedural care will occupy Level 9 (formerly Level 8).
- Medical faculty offices will occupy Levels 6-8 (formerly Research faculty offices on Levels 6-7).
- A replacement 46-bed Neonatal Intensive Care Unit will occupy Level 5 (formerly Level 3).
- A replacement Labor and Delivery Unit will occupy Level 4 (also formerly Level 4).
- Other obstetrical support services (OB, Ultrasound, In Vitro Fertilization) will occupy Level 3 (formerly Level Minus 1).
- Administration/house staff education and support areas will occupy Level 2 (also formerly Level 2).
- ER Administration/OB Triage and Admitting areas will occupy the Ground Floor Level (also formerly Ground Floor Level).
- Non-Invasive Cardiology/Telecommunications will occupy Level Minus 1 (also formerly Level Minus 1).
- Biomedical Engineering/Mechanical will occupy Level Minus 2 (also formerly Level Minus 2).

TABLE 1

BRIGHAM AND WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY PROGRAM
ORIGINAL ENF VS. PROJECT CHANGE

Floor Level	Original ENF Program	Project Change Program
Level 9	Not proposed in ENF	Hotel
Level 8	Hotel	Medical Faculty Offices
Level 7	Hotel	Medical Faculty Offices
Level 6	Research Faculty Offices	Medical Faculty Offices
Level 5	Research Faculty Offices	Neonatal Intensive Care Unit
Level 4	Labor & Delivery	Labor & Delivery
Level 3	Neonatal Intensive Care Unit	OB Services
Level 2	Faculty Offices House Staff Areas	Administration House Staff Areas
Ground Floor Level	Emerg. Room, Administration OB Triage, etc.	Emerg. Room, Administration OB Triage & Admitting
Level Minus 1	OB Services Non-Invasive Cardiology	Non-Invasive Cardiology Telecommunications
Level Minus 2	Mechanical Shop Areas	Biomedical Engineering/Mechanical

3. ENF Certificate of the Secretary

The Certificate of the Secretary on the ENF did not require the preparation of an Environmental Impact Report. The Secretary identified three potentially significant environmental issues: traffic, sewage, and historic structures, as follow:

o Traffic

The project was expected, and still is expected, to generate approximately 800 net new daily vehicle trips. BWH remains committed to discouraging automobile use by increasing parking fees and subsidizing employee transit passes. At MEPA's suggestion, BWH will expand its public transportation information program to include a color map of the MBTA system with directions to the hospital via public transportation.

BWH is a member of, and the largest financial contributor to, the Medical Area Service Corporation (MASCO), which completed a privately-funded areawide transportation study in 1988. Of the 35 improvements recommended in that study, implementation is underway on nine, and twelve more are committed for implementation by 1992, using a combination of public and private funds. BWH is also committed to funding and participating in additional traffic reduction programs through MASCO's Transportation Management Organization, "Commuteworks".

- Changes to Traffic Forecast from the ENF

The project change adds 21,000 sf of faculty offices. However, the revised traffic generation estimate (See Tables 2 and 3) is slightly lower than the original forecast, as explained below.

Since the ENF was filed (December 15, 1989), BWH has reviewed its staff needs and space requirements and determined that the originally proposed and additional faculty offices will be occupied by active staff physicians rather than researchers. Also, this review concluded that only 44 offices will be occupied by net new staff. The remaining offices will be used mainly for existing active staff physicians who currently occupy either (1) overcrowded or outmoded offices on the BWH campus or (2) office space which will be converted to clinical use to relieve overcrowding in clinical facilities. This information is reflected in Tables 2 and 3.

TABLE 2

BRIGHAM AND WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY
1994 DAILY VEHICLE TRIP GENERATION WITH PROJECT CHANGE

Category	Net New Staff*	Net New Persons On Typical Weekday**	Net New Daily Vehicle Trips**
Physicians			
Active Staff	44 (6)	22 (3)	32 (4)
(Researcher)	(74)	(70)	(67)
Resident	10	7	7
SUBTOTAL	54 (90)	29 (80)	39 (78)
Employees			
Reg. Nurse	95	65	92
Lic. Pract. Nurse	9	9	14
Technician	14	10	9
Sec./Clerical	32	29	30
Support	24	21	14
SUBTOTAL	174	134	159
Patients			
In-Patients	N/A	11	26
Out-Patients	N/A	187	270
SUBTOTAL	N/A	198	296
Visitors			
Patient Visitors	N/A	110	121
Business	N/A	16	27
SUBTOTAL	N/A	126	148
TOTAL	N/A	487 (538)	642 (681)
Hotel	N/A	N/A	145
TOTAL INCLUDING HOTEL			787 (826)

Parentheses ( ) indicates numbers presented in December 15, 1989 ENF, Attachment 5, Table 2.

* Source: Prepared for BWH by Vanasse Hangen Brustlin, Inc.

** Source: Based on relationships established in the April, 1989, Transportation Master Plan.

N/A = Not Applicable

TABLE 3

BRIGHAM AND WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY
1994 PEAK PARKING DEMAND WITH PROJECT CHANGE

Category	Net New Staff*	New Persons Arriving on Typical Weekday**	3:00 PM Peak Net New Parking Space Demand**
Physicians			
Active Staff	44 (6)	22 (3)	13 (2)
(Researcher)	(74)	(70)	(19)
Resident	10	7	4
SUBTOTAL	54 (90)	29 (80)	17 (25)
Employees			
Reg. Nurse	95	65	36
Lic. Pract. Nurse	9	9	5
Technician	14	10	4
Sec./Clerical	32	29	7
Support	24	21	6
SUBTOTAL	174	134	58
Patients			
In-Patients	N/A	11	1
Out-Patients	N/A	187	7
SUBTOTAL	N/A	198	8
Visitors			
Patient Visitors	N/A	110	13
Business	N/A	16	3
SUBTOTAL	N/A	126	16
TOTAL	N/A	487 (538)	99 (107)
Hotel	N/A	N/A	10
TOTAL INCLUDING HOTEL			109 (117)

Parentheses ( ) indicates numbers presented in December 15, 1989 ENF, Attachment 5, Table 3.

* Source: Prepared for BWH by Vanasse Hangen Brustlin, Inc.

** Source: Based on relationships established in the April, 1989, Transportation Master Plan.

N/A = Not Applicable

The net impact is to improve on proposed daily traffic generation and peak parking demand from the Clinical Support Facility as follows:

	ENF Increase	Project Change Increase (Difference)
Total Daily Vehicle Trips (to and from site)	826	787 (-39)
Estimated Average Daily Traffic on Roads Serving Site		
o Brookline Avenue (North of Francis Street)	290	280 (-10)
o Francis Street (East of Brookline Avenue)	420	400 (-20)
o Huntington Avenue (North of Francis Street)	90	90 (NC)
Peak (3:00 PM) Parking Space Demand	117	109 (-8)

- Sewage

  Mitigation for the new sewer flows was required by both city and state agencies with new flows in the range of 23,000 gpd. Mitigation would be in form of CSO reductions. BWH also presented information to Boston Water & Sewer Commission (BWSC) and BWSC comments on the ENF were addressed.

  - Impact of Change on Sewage

    Title 5 calculations for sanitary sewage with an additional 21,000 gross square feet of medical faculty offices yielded a total quantity of 25,300 gpd, an increase of 2,300 gpd from the total amount filed in the ENF. Because fixtures in the Clinical Support Facility will comply with standards in the Massachusetts Building Code, sewage flows are expected to be considerably less than Title 5 calculations.

    (Source: R.W. Sullivan, Inc.)

- Historic Structures

  The 32,600 square foot existing Tackaberry Building to be demolished was not found to be historic by either the city or state agencies.

- Impact of Change on Historic Structures

  There is no impact on historic structures in the project vicinity from the proposed project change. Total height with the additional floor will still be compatible with the height of nearby buildings at Brigham & Women's Hospital, and throughout the Longwood Medical Area. No additional demolition is required.

4. Other Information

The project change (i.e., the addition of one additional floor to the Clinical Support Facility) will not create any other areas of potential impact as described in Section I.E. of the ENF, except the following:

- Water Consumption

  The consumption of water per day based on Title 5 calculations will increase by 2,500 gallons resulting in an approximate consumption of 27,800 gpd gallons per day as opposed to the 25,300 gpd number in the ENF. Because fixtures in the Clinical Support Facility will comply with standards in the Massachusetts Building Code, water consumption is expected to be considerably less than Title 5 calculations.

  (Source: R.W. Sullivan, Inc.)

5. Consistency with Present Planning

The Clinical Support Facility is proposed to remedy existing support services space deficiencies on the BWH campus. The project is incorporated into the Brigham & Women's Hospital Institutional Master Plan revised October 1989, and previously submitted to the Boston Redevelopment Authority, and on file with the City of Boston and the Boston Redevelopment Authority. A Project Notification Form (PNF) has also recently been filed with the Boston Redevelopment Authority for the amended project, described herein.

6. Conclusions

In summary, the environmental consequences of the project were carefully and thoroughly examined in the original ENF. The project, as presently contemplated, is a minor modification of the previously proposed project with new impacts limited to minor additional sewage generation and water consumption.

> We, therefore, respectfully request that your Office make a determination that the project changes embodied in the Brigham & Women's Hospital revised proposal for the Clinical Support Facility building are not so significant in terms of environmental impact as to warrant any additional MEPA review.

We have distributed copies of this Notice of Project Change to all parties on the attached ENF Circulation List.

Please do not hesitate to contact us if further information is required.

Very truly yours,

BRIGHAM & WOMEN'S HOSPITAL, INC.

Nicholas J. Johnson
Vice President, Administration

HMM ASSOCIATES, INC.

Mitchell L. Fischman
Senior Project Manager

/jf

Enclosures:
- Exhibit 1 - BWH Clinical Support Facility: Revised Building Section
- Exhibit 2 - BWH Clinical Support Facility: Site and Neighborhood Axonometric
- Exhibit 3 - BWH Clinical Support Facility: Section Through Neighborhood
- Exhibit 4 - ENF Distribution List

cc: ENF Distribution List (Exhibit 4)

EXHIBIT 1

BWH Clinical Support Facility:
Revised Building Section

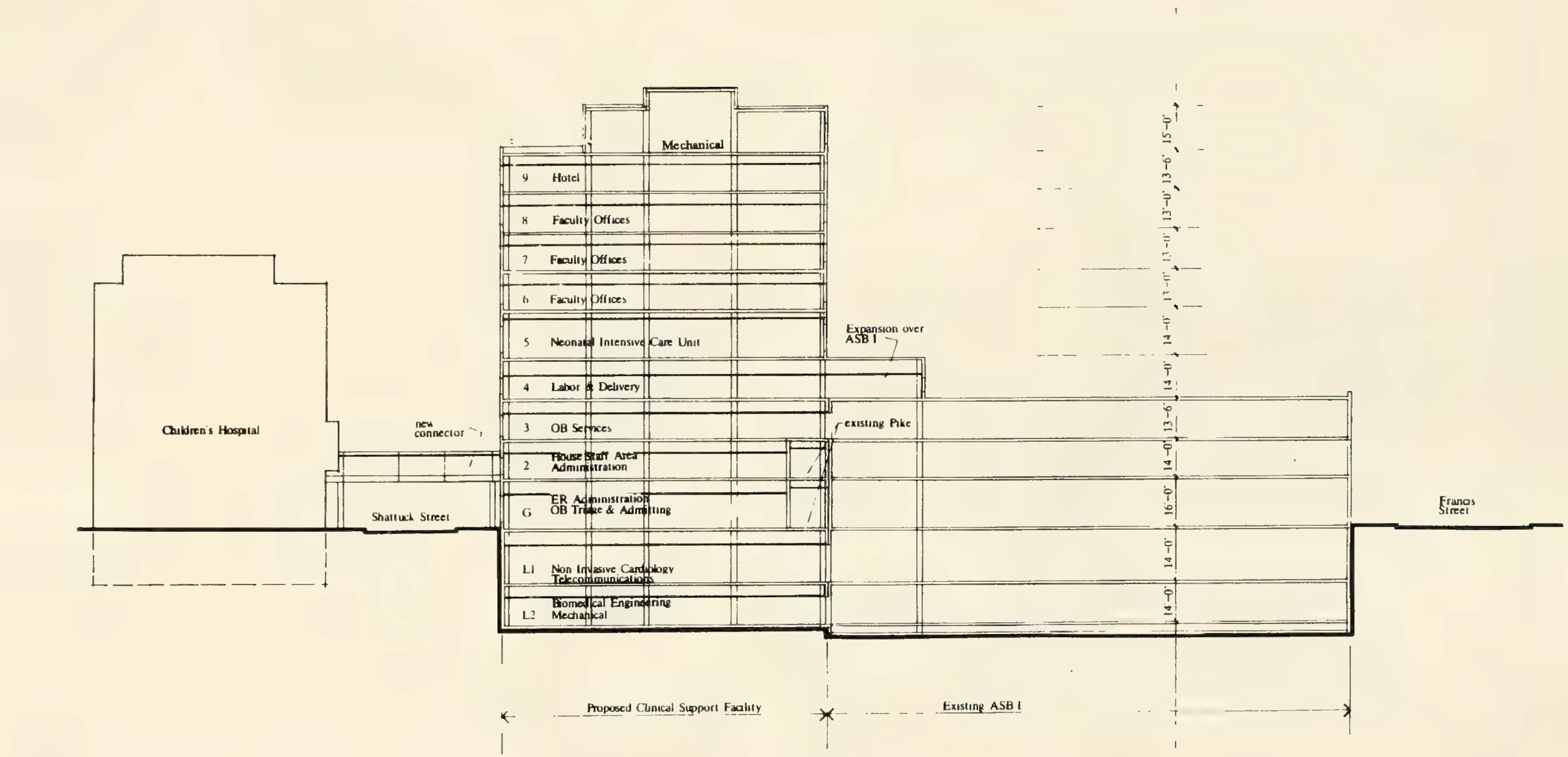


EXHIBIT 1: REVISED BUILDING SECTION

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

APRIL 30, 1990

EXHIBIT 2

BWH Clinical Support Facility:
Site and Neighborhood
Axonometric

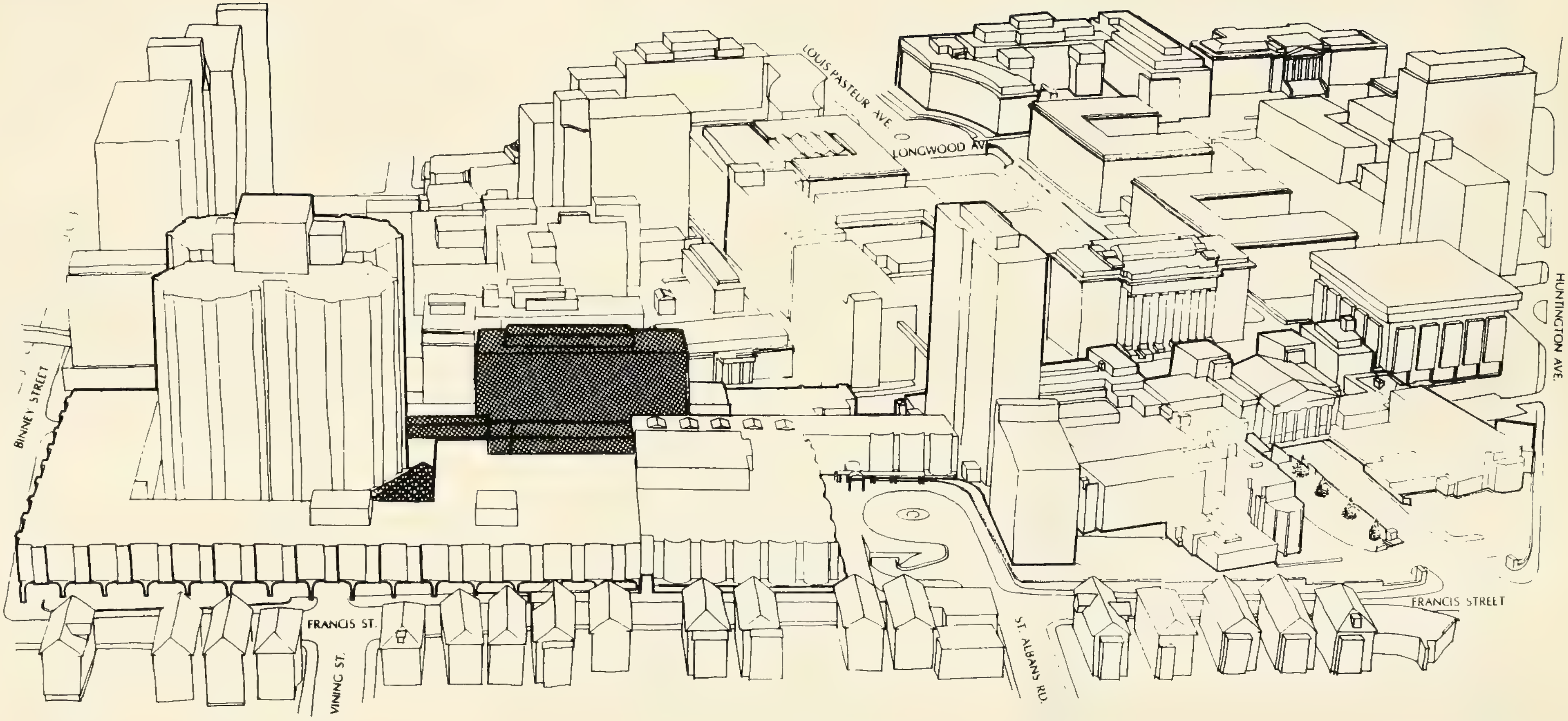


EXHIBIT 2: SITE & NEIGHBORHOOD AXONOMETRIC

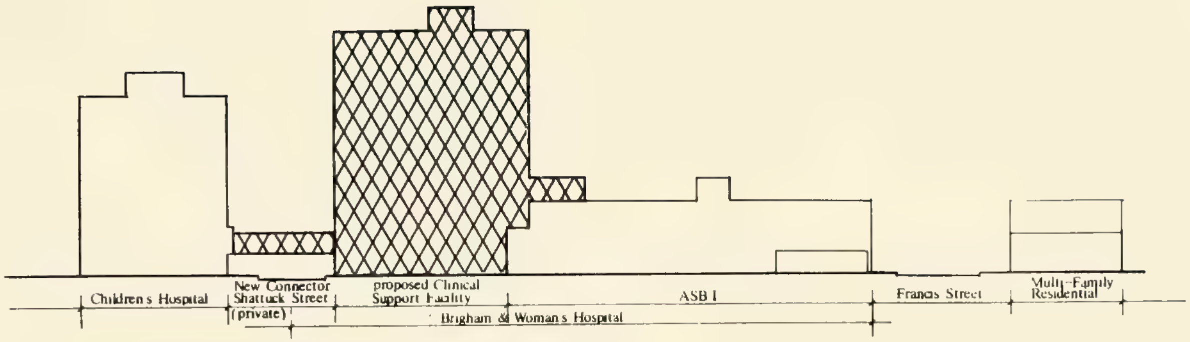
BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

Tsoi/Kobus & Associates • Architects

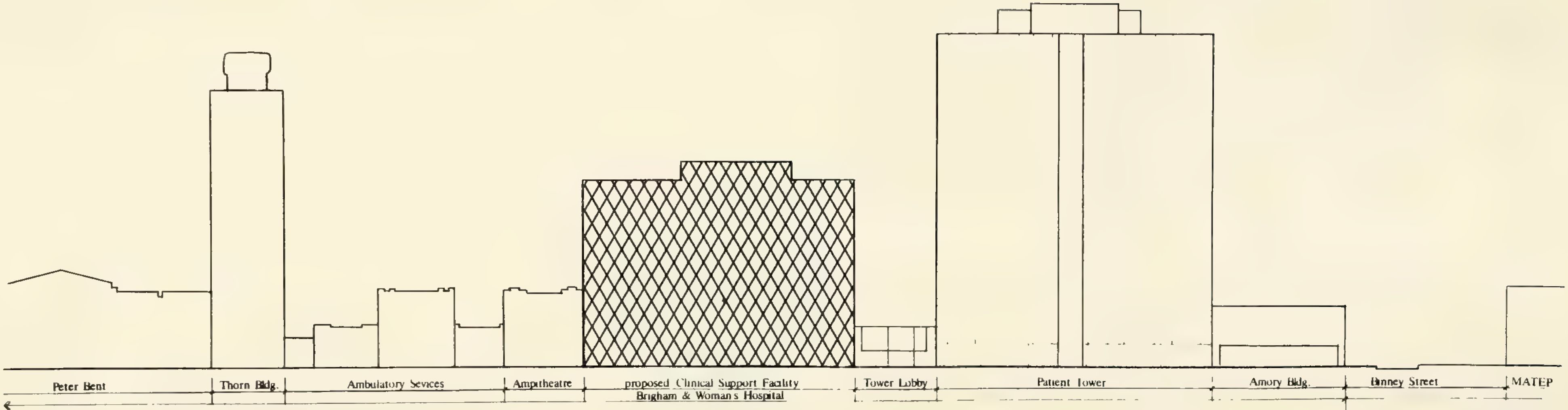
APRIL 30, 1990

EXHIBIT 3

BWH Clinical Support Facility:
Section Through Neighborhood



1 North-South Site Section



2 East-West Site Section

EXHIBIT 3: SECTION THROUGH NEIGHBORHOOD

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

APRIL 30, 1990

Tsoi/Kobus & Associates • Architects

EXHIBIT 4

ENF Distribution List

EXHIBIT 4

ENF CIRCULATION LIST: BRIGHAM & WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY EOEA # 8063

1. Secretary of Environmental Affairs
100 Cambridge Street, 20th Floor
Boston, Massachusetts 02202
Attention: Mr. David Shepardson, MEPA Unit

2. Department of Environmental Protection
One Winter Street
Boston, Massachusetts 02108

3. Department of Environmental Protection
Division of Water Pollution Control
One Winter Street
Boston, Massachusetts 02108

4. Department of Environmental Protection
Division of Air Quality Control
One Winter Street
Boston, Massachusetts 02108

5. Regional Environmental Engineer
Department of Environmental Protection
Metropolitan Boston/Northeast Regional Office
5 Commonwealth Avenue
Woburn, Massachusetts 01801

6. Department of Environmental Protection
Division of Water Pollution Control
Metropolitan Boston/Northeast Regional Office
5 Commonwealth Avenue
Woburn, Massachusetts 01801

7. Department of Environmental Protection
Division of Air Quality Control
Metropolitan Boston/Northeast Regional Office
5 Commonwealth Avenue
Woburn, Massachusetts 01801

8. Executive Office of Communities & Development
State Clearinghouse
100 Cambridge Street, 9th Floor
Boston, Massachusetts 02202

9. Massachusetts Historical Commission
80 Boylston Street
Boston, Massachusetts 02116

10. Metropolitan Area Planning Council
60 Temple Place
Boston, Massachusetts 02111
Att: David C. Soule
Executive Director

11. Metropolitan District Commission
20 Somerset Street
Boston, MA 02100
Attn: M. Ilyas Bhatti, Commissioner

12. Department of Public Works-District 8
400 D Street
Boston, Massachusetts 02210

13. Boston Redevelopment Authority
City Hall
Boston, Massachusetts 02108
Attn: Paul Reavis, Assistant Director

14. Massachusetts Water Resources Authority
100 First Avenue
Charlestown Navy Yard
Charlestown, Massachusetts 02129

15. Boston Water Sewer Commission
425 Summer Street
Boston, Massachusetts 02210-1700
Attn: John P. Sullivan, Jr. P.E.
Chief Engineer

16. Executive Office of Transportation & Construction
10 Park Plaza, Room 3510
Boston, Massachusetts 02202
Attn: Frederick P. Salvucci, Secretary

17. Department of Public Works
10 Park Plaza, Room 4260
Boston, Massachusetts 02202

18. Massachusetts Bay Transportation Authority
10 Park Plaza, 6th Floor
Boston, Massachusetts 02116-3966

19. Department of Transportation
One City Hall Square
City Hall
Boston, Massachusetts 02201

20. Boston Landmarks Commission
Environmental Department
One City Hall Square
City Hall
Boston, Massachusetts 02201

21. Department of Environmental Protection
Division of Hazardous Material
One Winter Street
Boston, Massachusetts 02108

22. Department of Public Health
150 Tremont Street
Boston, Massachusetts 02111

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

MICHAEL S. DUKAKIS
GOVERNOR

JOHN DEVILLARS
SECRETARY

July 23, 1990

Mr. Mitchell L. Fischman
HMM Associates, Inc.
196 Baker Ave.
Concord MA 01742

Re: EOEA #8063 Brigham and Women's Hospital Clinical Support Facility, Boston - Project Change

Dear Mr. Fischman:

I have reviewed your notification of project change dated May 10, 1990, which was published in the Environmental Monitor of May 23, 1990. The change adds an additional 21, 000 square foot floor to the proposed 181,782 square foot building. A comment letter was received from the BRA seeking no further MEPA review, but indicating a need for a City Project Impact Report.

As a result of the MEPA review, the hospital is in the process of preparing better guidance for patient use of Mass Transit. In addition CSO reductions are planned to mitigate for the increased sewer flows. The project change will increase those sewer flows from 23,000 to 25,300 gpd.

Based upon the factors cited in 301 CMR 11.17, it is the opinion of the Secretary that the changes listed do not significantly increase the environmental consequences of the project. No further MEPA review is required.

Sincerely,

Janet G. McCabe

Janet McCabe
Assistant Secretary
Environmental Impact Review

JM/DES/ds

100 CAMBRIDGE STREET, BOSTON, MA 02202 (617) 727-9800

100% RECYCLED PAPER

APPENDIX D

Revised Notice of Project Change Submission to Executive Office of Environmental Affairs, February 15, 1991, and Correspondence from Assistant Secretary, EOEA, March 28, 1991

h

96 Ba

ree

HMM ASSOCIATES, INC.
ENGINEERS, ENVIRONMENTAL CONSULTANTS & PLANNERS

HMM Ref. No. 5185-301/ENV-4258

February 15, 1991

Ms. Susan Tierney
Secretary
Executive Office of Environmental Affairs
100 Cambridge Street
Room 2000
Boston, MA 02202

ATTN: MEPA Unit

RE: Revised Notice of Project Change
Brigham and Women's Hospital
Clinical Support Facility
EOEA #8063

Dear Secretary Tierney:

Pursuant to 310 CMR 11.17(1) of the Massachusetts Environmental Policy Act (MEPA), Brigham and Women's Hospital (BWH) is notifying your Office of a revised project change to BWH's proposed Clinical Support Facility in Boston.

The BWH proposed facility was the subject of an Environmental Notification Form (ENF) filed with your Office on December 15, 1989. It was noticed in the Environmental Monitor on December 26, 1989. A Certificate of the Secretary was issued on January 25, 1990 determining that the proposed project did not require the preparation of an Environmental Impact Report.

On May 10, 1990, an initial notice of project change was submitted to your office. It appeared in the Environmental Monitor on May 25, 1990, and a letter was issued by the Assistant Secretary on July 23, 1990 indicating that no further environmental filings were required.

196 Baker Avenue • Concord • Massachusetts • 01742 • (508) 371-4000 • FAX: (508) 371-2468
Three Executive Park Drive • Bedford • New Hampshire • 03102 • (603) 647-1010 • FAX: (603) 626-4642

A revised Notice of Project Change is now being filed outlining further refinements to the proposed Clinical Support Facility resulting from a better definition of the space requirements for the same users reported to you in our earlier filings.

1. Original ENF / Initial Project Change

In the Environmental Notification Form (ENF), Brigham and Women's Hospital proposed to construct a 181,782 g.s.f., eight-story Clinical Support Facility to primarily house obstetrical services, including a labor and delivery unit, a neonatal intensive care unit, ancillary offices and support staff areas, and an in-house hotel for the families of patients. The majority of these services are already located elsewhere on campus in facilities of insufficient size to accommodate present and anticipated demand. The Clinical Support Facility would replace the 35,600 gross square foot Tackaberry Building, which is currently located on the site.

The ENF proposed of replacement of the elevated walkway bridge to connect the Clinical Support Facility at Level 2 to The Children's Hospital Medical Center across Shattuck Street. In addition, a connecting bridge will join the new building to the adjacent BWH Patient Tower.

Construction is expected to commence in June, 1991 and to be completed by late 1993.

In its ongoing program assessment, BWH determined the need for additional space for medical faculty offices. These are now located in overcrowded spaces in other locations within the BWH campus, and are needed to accommodate new doctors and staff members that BWH expects to attract. Therefore, the Hospital proposed one additional floor (approximately 21,000 g.s.f.) to the proposed Clinical Support Facility. This would increase the total area to 202,700 g.s.f., and increase the building height to nine stories (approximately 138 feet). Because of this revision, the initial project change notification was submitted to MEPA on May 10, 1990.

2. Revised Project Change

BWH has now completed its schematic building design and an initial space needs determination for each of the programs which will occupy the Clinical Support Facility. Major external inputs to this further program refinement have included discussions with licensure staff at the Division of Health Care Quality at DPH regarding the adequacy of proposed space for Obstetrical and NICU services, and discussions with DON Office regarding acceptable changes within the initial DON submission. The Hospital has also held discussions with the Mayor's Task Force on Infant Mortality regarding additional planned resource commitments by BWH for community obstetrical services. BWH has committed $1.8 million for additional community health programs. The components of BWH's intended additional

community programs include School-based Health Education, Extended Case Management and Outreach Services, Obstetrical Back-up for Detoxification Programs, Expanded Obstetrical and Nurse Midwife Services, and the BWH Center for Perinatal and Family Health. The primary outcome of these discussions has been the filing of a revised DON plan for a larger building consisting of two components:

1. 165,000 square feet of clinical space subject to DON approval at this time.

2. An additional 86,000 square feet of space (Floors 6-9) which would be constructed initially as shell space and to be finished at a later date.

For financial reasons, some consideration has also been given to the possibility of simply foregoing construction of Floors 6-9 at this time and to completing these floors at a later date as part of a second phase expansion. However, after further study, BWH has determined that there are two reasons for adding the shell space floors at this time:

1. Planning studies have indicated that no site other than the present Tackaberry Building exists on the BWH campus where future incremental square footage could be constructed in proximity to the Tower and to existing clinical programs. The Tackaberry site thus represents the most feasible location to continue to accommodate future facility needs at the hospital.

2. Design reviews have concluded that to provide sufficient floorplate size for adequate Labor and Delivery and Neonatal Intensive Care facilities, per DPH standards, the new L&D floor must be constructed on no lower elevation than the Fourth Level of the proposed new Clinical Support Facility with the NICU above. With the new L&D and NICU facilities located on these upper levels, it would not be possible at a later date to construct a second phase vertical expansion without disrupting vital on-going obstetrical services. The upper level L&D and NICU locations are also highly desirable to provide natural light for the examination of babies and for patient comfort.

In total, design revisions made to meet program and engineering requirements will increase the building gross area to approximately 229,056 FAR gross SF plus approximately 7,500 GSF for the ambulance court on the Ground Level. The building height is approximately 164 feet.

The increase in the building's gross square footage has accommodated significant increases in areas allocated to engineering systems. Through the BRA's Schematic Design Review period since June, 1990, the mechanical shaft areas have increased, particularly on Floors 6-9. Linen and trash disposal chutes have been added to the program, and electrical and telephone spaces have increased. Mechanical and electrical service areas at L2 and the Penthouse have increased appreciably as the design requirements have been clarified.

The increase in area dedicated to engineering systems (Structural, Mechanical, and Electrical), utility areas, and the inclusion of the ambulance court has significantly impacted the building's gross square footage areas. These areas are required for building services that are in addition to the departmental program and building circulation areas. Building FAR square footage, or usable area, will exclude these non-habitable areas dedicated to mechanical and electrical services, and utility spaces.

The Clinical Support Facility's program and total staff estimates remain unchanged from those described in the May 10, 1990 letter regarding the initial project change (see Table 1, which follows). In addition, the majority of the floor area increase has occurred within the following areas:

a) In the building, with a provision for a mezzanine and an intermediate floor.

b) Over the adjacent BWH Ambulatory Services Building's (ASB-1) roof, at Level Four of the CSF.

As indicated previously, the increase of approximately 55,000 GSF is in response to various factors developed during the schematic design:

a) DPH informal review of proposed Labor and Delivery and NICU design, with resultant increases in family and support space.

b) Added outpatient obstetrical space in anticipation of additional community service commitments.

c) Additional programmatic requirements identified within the below grade L1 level.

d) Structural design requirements.

e) Additional mechanical area required to accommodate increased equipment sizes of the HVAC system, chosen after careful consideration by the Hospital.

Specifically, most program area increases occur at:

a) Level L1 Intermediate Floor (7,500 g.s.f.). This area is required to provide additional flexibility to accommodate long-range planning needs for the clinical services on Level L1. This basement level in the existing Tower Building contains the Surgery and Radiology departments and is entirely below grade. The Clinical Support Facility will provide the last opportunity for future expansion of these critical departments.

TABLE 1
BRIGHAM AND WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY
PROJECT CHANGES

Floor Level	Initial Project Change (May 10, 1990)	Revised Project Change (February 15, 1991)
Penthouse	Mechanical	Mechanical Equipment
Level 9	Hotel	Initial Shell Space
Level 8	Research Faculty Offices	Initial Shell Space
Level 7	Research Faculty Offices	Initial Shell Space
Level 6	Research Faculty Offices	Initial Shell Space
Level 5	Neonatal Intensive Care Unit	Neonatal Intensive Care Unit
Level 4	Labor and Delivery	Labor and Delivery OB Triage and Admitting
Level 3/4	---	Obstetrical Faculty/Lockers/ On-Call
Level 3	OB Services	Obstetrical Clinic Expansion, Antenatal Diagnostic Clinic, In Vitro Fertilization
Main Floor	Administration House Staff Areas	Administration House Staff Areas Dining
Ground Floor Level	Emergency Room Administration OB Triage and Administration	Emergency Department Administration EMT Lounge/Ambulance Drop-Off
L1/M	---	Anesthesiology Faculty Offices
Level 1	Non-Invasive Cardiology Telecommunications	Non-Invasive Cardiology Telecommunications Respiratory Therapy/Pulmonary
Level 2	Biomedical Engineering/ Mechanical	BiomedicalEngineering/ Mechanical Bed Park and Repair

b) An intermediate floor has been added between levels 3 and 4 (12,500 square feet) to meet DPH and planning support space standards for the L&D and the NICU. This interfloor was made possible by raising the 4th floor of the Clinical Support Facility to align with the 5th floor of the existing Patient Tower, providing a level connection between the Labor and Delivery Department and the existing Postpartum beds in the Tower. This new floor provided staff support areas associated with the NICU and the Level 4 Labor and Delivery Suite.

c) Additional 4th floor expansion located on the roof of the existing Ambulatory Services Building I (7,000 g.s.f.) to accommodate the Obstetrical Triage area originally proposed for the ground floor. This appendage to the Clinical Support Facility also provides additional program area for the Labor and Delivery Suite.

d) Floors 6-9 increase approximately 5,000 g.s.f. due to the coordination of structural design requirements with the planning on lower levels. Floors 2 through 9 must cantilever significant distances in the south and west directions over existing, abutting buildings. The footprint of floor 5 has been carried through floors 6-9 to provide a moment frame system to achieve these cantilevers and sufficient vertical planes for lateral bracing to resist wind loads.

e) Additional Penthouse area (10,000 g.s.f.) to accommodate air handling units and ductwork required by the HVAC system and electrical service areas.

f) Miscellaneous design refinements on other floors (5,500 g.s.f.).

g) 7,500 g.s.f. of ambulance court is provided on the ground floor level. This area is dedicated ambulance space to upgrade existing ambulance service at the Hospital and meet current regulations and agency requirements.

The height of the Clinical Support Facility relates primarily to four factors:

a) The Labor and Delivery floor (4) has been raised to align with the 5th floor of the existing patient tower (7'-0"±) to provide a level connection to the existing Postpartum bed floors in the Tower.

b) Floor-to-floor heights at floors 4 through 9 increased 1'-0" to accommodate duct sizes associated with the HVAC system.

c) The roof of the Mechanical Penthouse has been raised to accommodate equipment sizes and associated ductwork required by the HVAC system.

d) Several floors have minor increases in floor-to-floor heights to accommodate structural and mechanical distribution system requirements.

All of the above will be subject to review by the Boston Redevelopment Authority as a part of a Draft Project Impact Report for the Clinical Support Facility which is being submitted simultaneously with this revised project change notice.

3. ENF Certificate of the Secretary

The Certificate of the Secretary on the ENF did not require the preparation of an Environmental Impact Report, and BWH's initial project change was not subject to further MEPA review. In the ENF Certificate, the Secretary identified three potentially significant environmental issues: traffic, sewage, and historic structures, as follow:

o Traffic

The project was expected, and still is expected, to generate approximately 800 net new daily vehicle trips. BWH remains committed to discouraging automobile use by increasing parking fees and subsidizing employee transit passes. At MEPA's suggestion, BWH has expanded its public transportation information program to include a color map of the MBTA system with directions to the hospital via public transportation.

BWH is a member of, and the largest financial contributor to, the Medical Area Service Corporation (MASCO), which completed a privately-funded areawide transportation study in 1988. As indicated in our May 20, 1990 letter, of the 35 improvements recommended in that study, implementation continues on nine, and twelve more are committed for implementation by 1992, using a combination of public and private funds. BWH is also committed to funding and participating in additional traffic reduction programs through MASCO's Transportation Management Organization, "Commuteworks".

Proposed daily traffic generation and peak parking demand from the Clinical Support Facility will be unchanged from the numbers identified in the initial May 10, 1990 project filing, as follows:

	Initial Project Change (May 10, 1990)	Revised Project Change (Feb. 15, 1991)
Total Daily Vehicle Trips (to and from site)	788	788 (NC)
Estimated Average Daily Traffic on Roads Serving Site		
o Brookline Avenue (North of Francis Street)	280	280 (NC)
o Francis Street (East of Brookline Avenue)	400	400 (NC)
o Huntington Avenue (North of Francis Street)	90	90 (NC)
Peak (3:00 PM) Parking Space Demand	109	109 (NC)

(NC) = No change from Initial Project Change Filing.

- Sewage
  - Impact of Change on Sewage

Even though total number of users is expected to remain substantially the same, Title 5 calculations for sanitary sewage with an additional 47,300 gross square feet of hospital offices/administration and patient and staff support areas yields an increase of approximately 2,633 gallons per day (gpd), bringing the total estimated sewage flow to 27,933 gpd, as compared to 23,000 gpd reported in the ENF and 25,300 gpd estimated in the initial project change. Because fixtures in the Clinical Support Facility will comply with standards in the Massachusetts Building Code, sewage flows are expected to be considerably less than Title 5 calculations.

In addition, as previously stated, the hospital plans, at its own added expense, to connect its sewage effluents to Francis Street on the southside of the campus approximately 187 feet away where sufficient capacity is available for this volume.

- Historic Structures

  - Impact of Change on Historic Structures

    There is no impact on historic structures in the project vicinity from the project as originally filed or from the current revision.

4. Other Information

The project change will not create any other areas of potential impact as described in Section I.E. of the ENF, except the following:

- Water Consumption

  Similar to the above discussion on changes to sewage impacts, we expect the total number of users to remain substantially the same. Nevertheless, the consumption of water per day based on Title 5 calculations would increase by 2,926 gpd, resulting in an approximate total consumption of 30,726 gpd, as compared to the ENF estimate of 25,300 gpd and 27,800 gpd reported in the initial project change. Because fixtures in the Clinical Support Facility will comply with standards in the Massachusetts Building Code, water consumption is expected to be considerably less than Title 5 calculations.

5. Consistency with Present Planning

The Clinical Support Facility continues to be proposed to remedy existing support services space deficiencies on the BWH campus. The project was a part of the Brigham & Women's Hospital Institutional Master Plan (revised October 1989), and previously submitted to the Boston Redevelopment Authority, and on file with the City of Boston and the Boston Redevelopment Authority. A Draft Project Impact Report (DPIR) has been filed with the Boston Redevelopment Authority for the amended project, described herein.

6. Conclusions

In summary, the environmental consequences of the project were carefully and thoroughly examined in the original ENF and in the initial notice of project change. The project, as presently contemplated, is a small revision of the previously proposed project with new impacts limited to minor calculated additional sewage generation and water consumption. Since the program and number of users is essentially unchanged, actual sewage generation and water consumption likely will be unchanged, as well. Any impacts will be further mitigated by the initial shell space construction of Floors 6 through 9, thereby delaying full occupancy of the Clinical Support Facility.

We, therefore, respectfully request that your Office make a determination that the project changes embodied in the Brigham & Women's Hospital revised proposal for the Clinical Support Facility building are not so significant in terms of environmental impact as to warrant any additional MEPA review.

We have distributed copies of this Notice of Project Change to all parties on the attached ENF Circulation List. (Exhibit 5).

Please do not hesitate to contact us if further information is required.

Very truly yours,

BRIGHAM & WOMEN'S HOSPITAL, INC.

Nicholas J. Johnson kp

Nicholas J. Johnson
Vice President, Administration

HMM ASSOCIATES, INC.

Mitchell L. Fischman

Mitchell L. Fischman
Senior Project Manager

MLF/jf

cc: Original ENF Distribution List (Exhibit 5)

Enclosures:
Exhibit 1 - BWH Clinical Support Facility: Revised Building Section
Exhibit 2 - BWH Clinical Support Facility: Revised Site and Neighborhood Axonometric
Exhibit 3 - BWH Clinical Support Facility: Revised Section Through Neighborhood
Exhibit 4 - BWH Clinical Support Facility: Revised Site Plan
Exhibit 5 - Original ENF Distribution List

EXHIBIT 1

BWH CLINICAL SUPPORT FACILITY: REVISED BUILDING SECTION

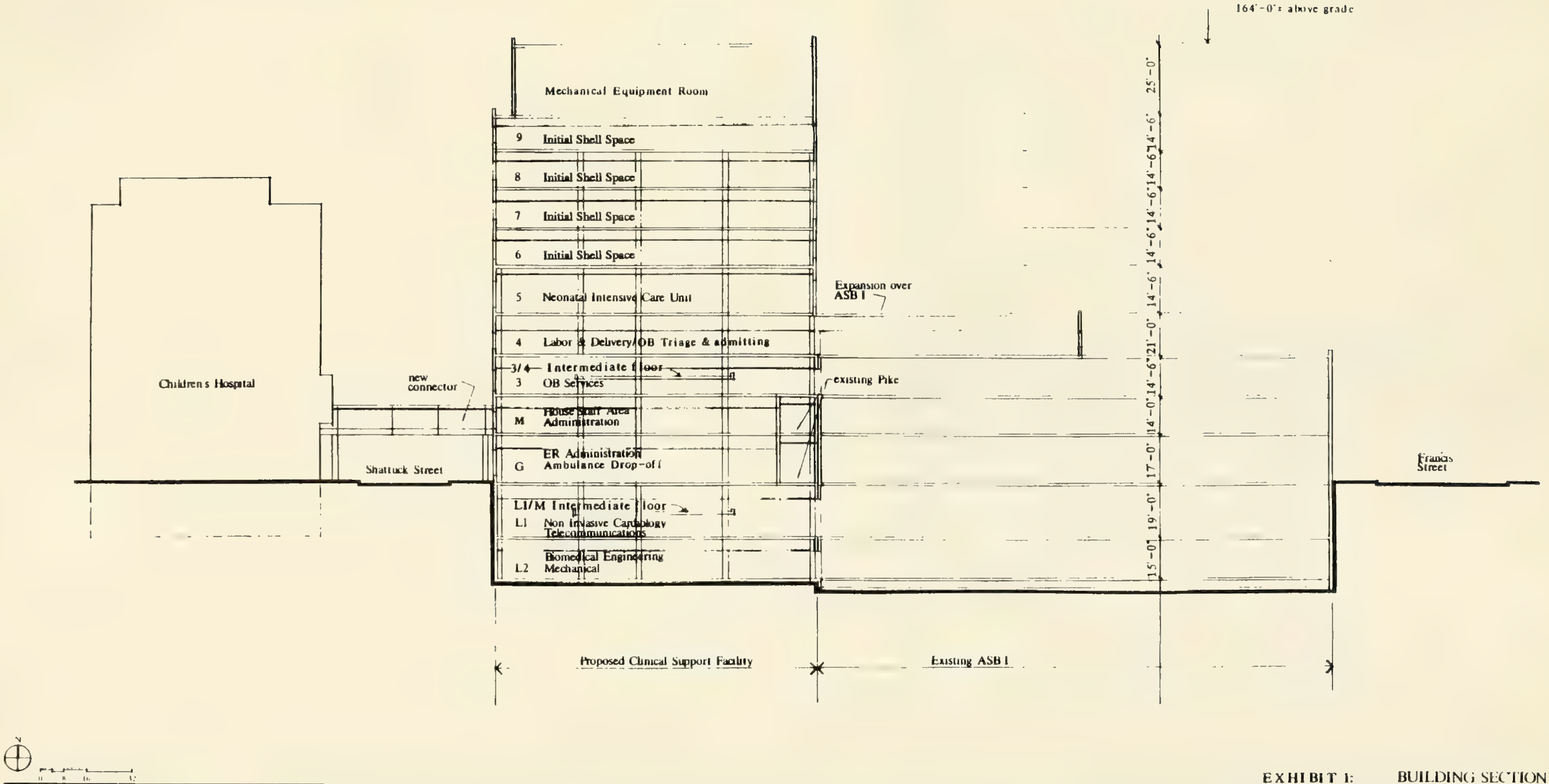


EXHIBIT 1: BUILDING SECTION

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

DECEMBER 14, 19

EXHIBIT 2

BWH CLINICAL SUPPORT FACILITY: REVISED SITE AND NEIGHBORHOOD AXONOMETRIC

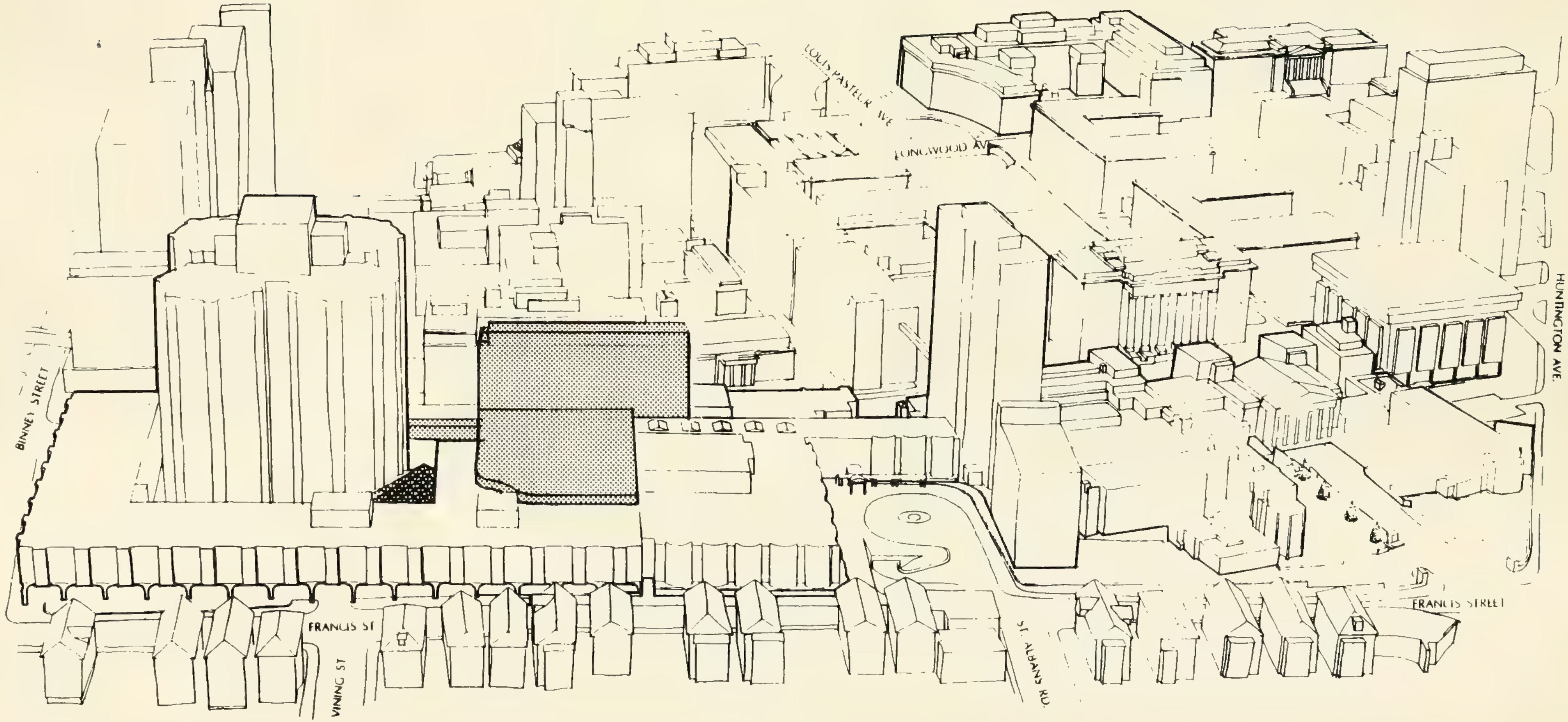


EXHIBIT 2: SITE & NEIGHBORHOOD AXONOMETRIC

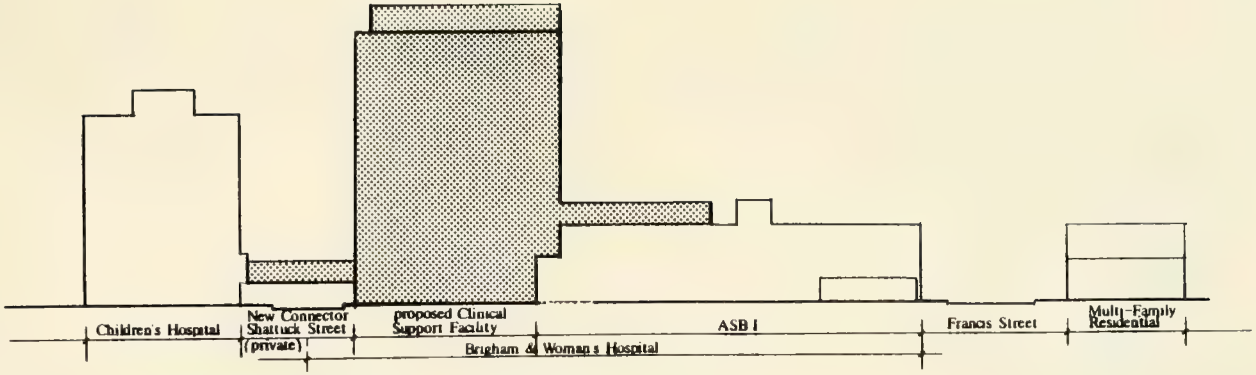
BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

Tsoi/Kobus & Associates • Architects

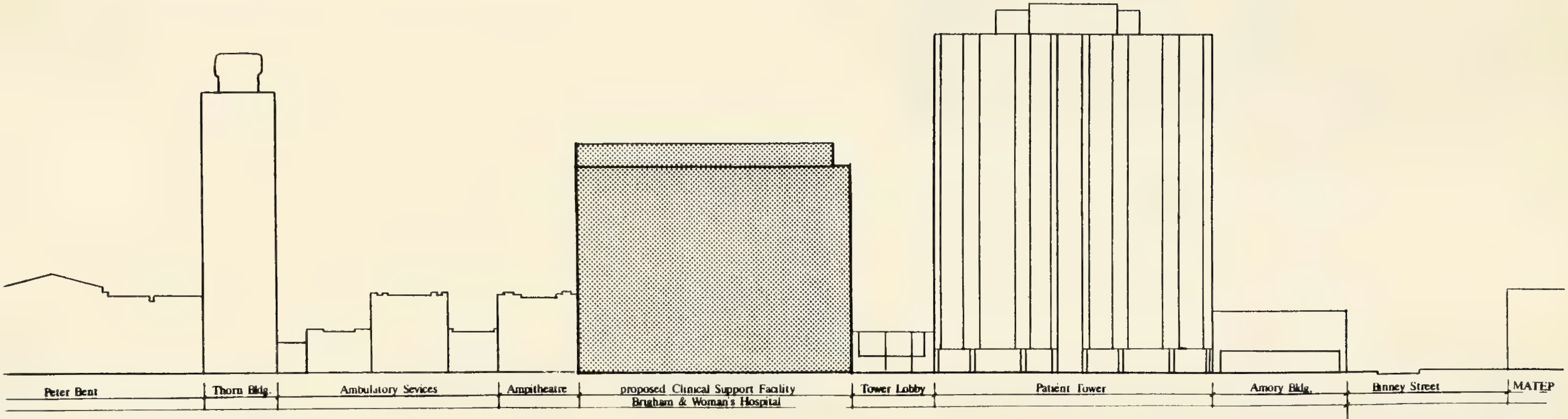
DECEMBER 14, 1990

EXHIBIT 3

BWH CLINICAL SUPPORT FACILITY
REVISED SECTION THROUGH NEIGHBORHOOD



① North-South Site Section



② East-West Site Section

EXHIBIT 3: SECTION THROUGH NEIGHBORHOOD

BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY

DECEMBER 14, 1990

Tsoi/Kobus & Associates • Architects

EXHIBIT 4

BWH CLINICAL SUPPORT FACILITY: REVISED SITE PLAN

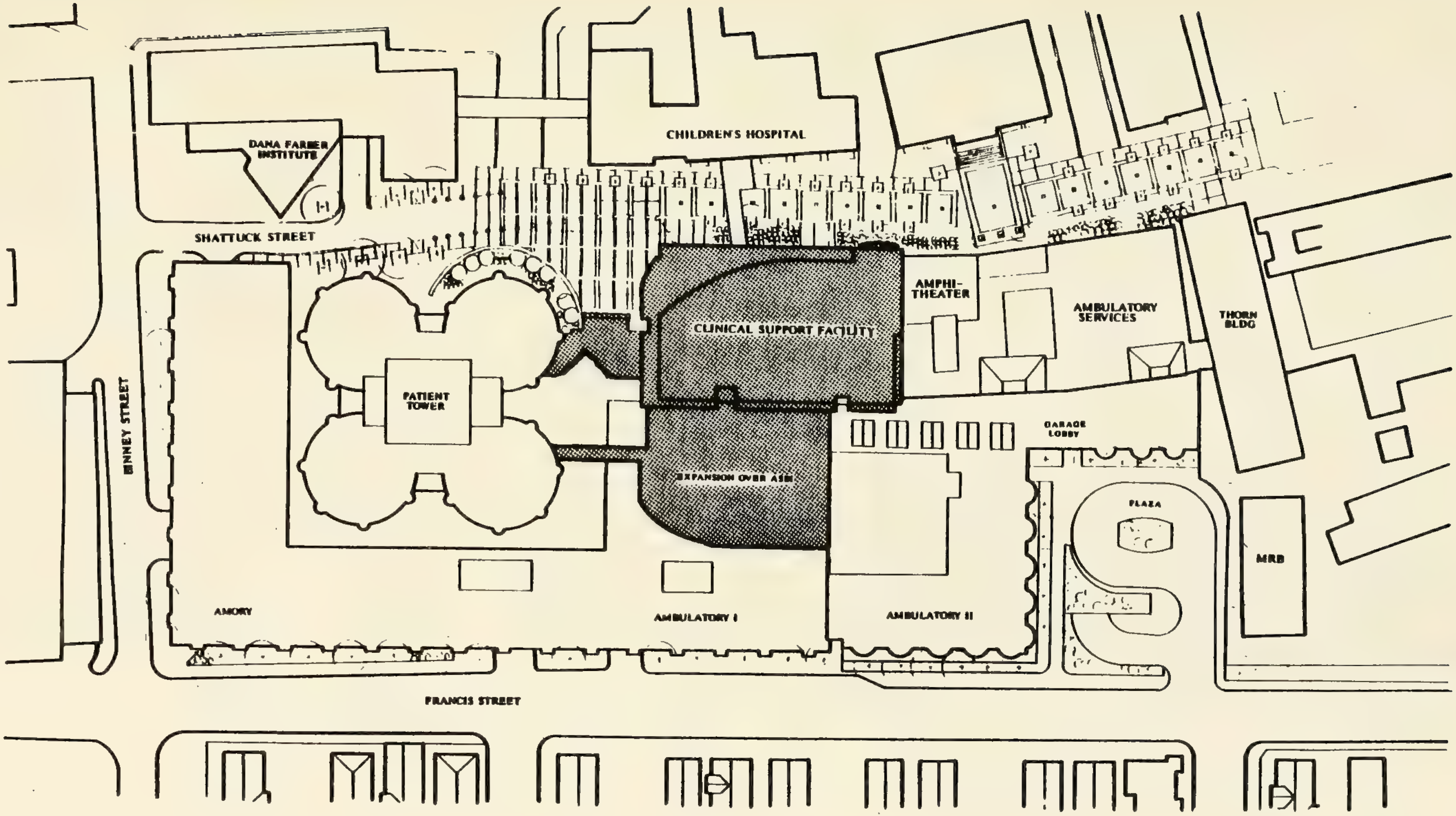


EXHIBIT 4: REVISED SITE PLAN

BRIGHAM AND WOMEN'S HOSPITAL **CLINICAL SUPPORT FACILITY**

TSOI / KOBUS & ASSOCIATES ARCHITECTS

SCHEMATIC DESIGN

A-1

EXHIBIT 5

ENF DISTRIBUTION LIST

EXHIBIT 5

ENF CIRCULATION LIST: BRIGHAM & WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY EOEA # 8063

1. Secretary of Environmental Affairs
   100 Cambridge Street - 20th Floor
   Boston, Massachusetts 02202
   ATTN: Mr. David Shepardson, MEPA Unit

2. Department of Environmental Protection
   One Winter Street
   Boston, Massachusetts 02108

3. Department of Environmental Protection
   Division of Water Pollution Control
   One Winter Street
   Boston, Massachusetts 02108

4. Department of Environmental Protection
   Division of Air Quality Control
   One Winter Street
   Boston, Massachusetts 02108

5. Regional Environmental Engineer
   Department of Environmental Protection
   Metropolitan Boston/Northeast Regional Office
   5 Commonwealth Avenue
   Woburn, Massachusetts 01801

6. Department of Environmental Protection
   Division of Water Pollution Control
   Metropolitan Boston/Northeast Regional Office
   5 Commonwealth Avenue
   Woburn, Massachusetts 01801

7. Department of Environmental Protection
   Division of Air Quality Control
   Metropolitan Boston/Northeast Regional Office
   5 Commonwealth Avenue
   Woburn, Massachusetts 01801

8. Executive Office of Communities & Development
   State Clearinghouse
   100 Cambridge Street - 9th Floor
   Boston, Massachusetts 02202

9. Massachusetts Historical Commission
   80 Boylston Street
   Boston, Massachusetts 02116

10. Metropolitan Area Planning Council
60 Temple Place
Boston, Massachusetts 02111
ATTN: David C. Soule, Executive Director

11. Metropolitan District Commission
20 Somerset Street
Boston, MA 02100
ATTN: M. Ilyas Bhatti, Commissioner

12. Department of Public Works - District 8
400 D Street
Boston, Massachusetts 02210

13. Boston Redevelopment Authority
City Hall
Boston, Massachusetts 02108
ATTN: Paul Reavis, Assistant Director

14. Massachusetts Water Resources Authority
100 First Avenue
Charlestown Navy Yard
Charlestown, Massachusetts 02129

15. Boston Water Sewer Commission
425 Summer Street
Boston, Massachusetts 02210-1700
ATTN: John P. Sullivan, Jr., P.E., Chief Engineer

16. Executive Office of Transportation & Construction
10 Park Plaza - Room 3510
Boston, Massachusetts 02202
ATTN: Richard Taylor, Secretary

17. Department of Public Works
10 Park Plaza - Room 4260
Boston, Massachusetts 02202

18. Massachusetts Bay Transportation Authority
10 Park Plaza - 6th Floor
Boston, Massachusetts 02116-3966

19. Department of Transportation
One City Hall Square
City Hall
Boston, Massachusetts 02201

20. Boston Landmarks Commission
Environmental Department
One City Hall Square
City Hall
Boston, Massachusetts 02201

21. Department of Environmental Protection
Division of Hazardous Material
One Winter Street
Boston, Massachusetts 02108

22. Department of Public Health
150 Tremont Street
Boston, Massachusetts 02111

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street, Boston, 02202

WILLIAM F. WELD
GOVERNOR
RGEO PAUL CELLUCCI
LIEUTENANT GOVERNOR
SUSAN F. TIERNEY
SECRETARY

(617) 727-9800

March 28, 1991

Mr. Mitchell L. Fischman
HMM Associates, Inc.
196 Baker Avenue
Concord MA 01742

Re: EOEA #8063 Brigham and Women's Clinical Support Facility - Boston, Second Project Change

Dear Mr. Fischman:

I have reviewed your notification of project change dated February 15, 1991 which brings the project to 257,700 square feet from the 181,782 of the ENF, and increases the height from the 8 floors of the ENF to 9 and a half floors. This is a 42% increase from the ENF project. An earlier project change of May 10, 1990 described some of the increase. Your letter of March 27, 1991 identifies the mitigation related to traffic and I/I reductions already committed to by the proponents as well as those measures under continuing discussions with each of the permitting agencies. While some of these elements were not included in the Draft Project Impact Report prepared for the Boston Redevelopment Authority, I note that this mitigation is considered to be part of this project as reviewed by this office. This decision and the 3/27/91 letter are being forwarded to the BRA.

Based upon the factors cited in 301 CMR 11.17, it is the opinion of the Secretary that the changes listed do not significantly increase the environmental consequences of the project. No further MEPA review is required.

Sincerely,

Janet G. McCabe

Janet McCabe
Assistant Secretary
Environmental Impact Review

JM/DES/ds

100% RECYCLED PAPER

BOSTON
REDEVELOPMENT
AUTHORITY

Raymond L. Flynn
Mayor

Stephen Coyle
Director

One City Hall Square
Boston, MA 02201
(617) 722-4300

RECEIVED
MAR 27 19
MEPA

3. 25. 91

Secretary Susan Tierney
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Attention: MEPA Unit

RE: EOEA #8063 - Brigham & Woman's Hospital Clinical Support Facility/Notice of Project Change

Dear Secretary Tierney:

Pursuant to regulations implementing M.G.L., Chapter 30, Sections 62-62H, the Boston Redevelopment Authority has reviewed the above-referenced Notice of Project Change and submits the following comments.

The project change to the proposed Clinical Support Facility, which is the subject of the above-referenced Notice, involves an increase of approximately 26,350 sq.ft. to the total area of the facility and an increase in height from 138 feet to 164 feet.

The project proponent, Brigham and Women's Hospital, recently has filed with the Authority a Draft Project Impact Report for the proposed project, as revised, and this Report currently is undergoing review pursuant to Article 31 of the Boston Zoning Code. We believe that the environmental impacts of the proposed project will undergo adequate review through the City's Article 31 review process.

Sincerely,

Paul Reavis
Assistant Director for
Engineering and Design Services

c: Nicholas J. Johnson
Vice President/Administration Services
Brigham & Women's Hospital

ston Redevelopment Authority is an Equal Opportunity Affirmative Action Employer • Equal Housing Opportunity

RECEIVED
FEB 28 1991
MEPA

City of Boston
The Environment
Department

Raymond L. Flynn
Mayor

Lorraine M. Downey
Director

Boston City Hall/Room 805
Boston, Massachusetts 02201
617/725-4416 or 725-3850

February 26, 1991

Secretary Susan Tierney
Executive Office of Environmental Affairs
100 Cambridge St. 20th Floor
Boston, MA 02202

Attn: MEPA UNIT
Re: EOEA #8063, Notice of Project Change, Clinical Support Facility, Longwood Medical Area, Boston

Dear Secretary Tierney:

The City of Boston Environment Department has reviewed the Notice of Project Change referenced above and hereby submits the following comments pertaining thereto:

In general, this project will prove beneficial to the residents of the City with its committment to provide community health services to low-income pregnant women.

Staff of the Landmarks Commission have determined that the proposed changes will not effect any structures of historic significance.

Traffic impacts will not increase as a result of the proposed changes in project design.

Water consumption will increase only marginally as a result of the proposed changes; the proponent should however contact the Boston Water and Sewer Commission to inform the Commission of the proposed changes.

It is the opinion of the Environment Department that no further review is necessary as a result of the proposed changes in the project.

I thank you for your time and consideration.

Sincerely,

Lorraine Downey

Lorraine Downey
Director

LMD/AP/ap

Air Pollution Control, Boston Art, Back Bay Architectural, Beacon Hill Architectural, Boston Landmarks and the Conservation Commissions

B W H

APPENDIX E

Revised Transportation Access Plan for the Clinical Support Facility, Brigham and Women's Hospital, July, 1991

Transportation Access Plan

Brigham and Women's Hospital

Clinical Support Facility
Boston, Massachusetts

Prepared for	Brigham and Women's Hospital Boston, Massachusetts
Prepared by	Vanasse Hangen Brustlin, Inc. Watertown, Massachusetts

July, 1991

RESPONSE TO COMMENTS ON THE DRAFT PROJECT IMPACT REPORT/ TRANSPORTATION ACCESS PLAN

BRIGHAM AND WOMEN'S HOSPITAL - CLINICAL SUPPORT FACILITY

Boston, Massachusetts

Prepared for:
Brigham and Women's Hospital
75 Francis Street
Boston, Massachusetts

Prepared by:
Vanasse Hangen Brustlin, Inc.
Engineers, Planners, and Scientists
101 Walnut Street
P.O Box 9151
Watertown, Massachusetts 02272

June 11, 1991

2279/691/
TPr-BR8

COMMENT #1	Figure 3: There appear to be errors in the directions of the eastbound arrows on Francis Street (which is not labeled). Same comment for Figures 6 and 7.
RESPONSE	Figures 3, 6, and 7 have been corrected to show Francis Street and the appropriate turning movements on the eastbound approach to Huntington Avenue. They are presented again on the following pages.
COMMENT #2	Table 10: The decrease in delay (Build vs. No-Build) for Huntington Avenue/Francis Street in the Morning Peak Hour appears to be an error, unless there is some circulation improvement which has not been explained. This should be clarified.
RESPONSE	The delay information shown for the 1993 No-Build and Build conditions in the Draft Project Impact Report on the second line of Table 10 was accidentally reversed. The results have been corrected and reproduced in a revised Table 10 below. While the delay information was mistakenly switched, both the LOS and Total Entering Vehicles information is correct.

Table 10 INTERSECTION ANALYSIS RESULTS (REVISED)

	Existing			1993 No-Build			1993 Build		
	Delay**	LOS***	Total Entering Vehicles	Delay	LOS	Total Entering Vehicles	Delay	LOS	Total Entering Vehicles
Morning Peak Hour:									
Brookline Avenue and Francis Street	16.4	C	2,290	60+	F	2,684	60+	F	2,733
Huntington Avenue and Francis Street	22.7	C	2,200	36.3	D	2,476	39.5	D	2,490
Evening Peak Hour:									
Brookline Avenue and Francis Street	61.5	F	2,460	60+	F	2,742	60+	F	2,777
Huntington Avenue and Francis Street	39.8	D	2,565	60+	F	2,931	60+	F	2,949

* Average stopped delay per vehicle in seconds.
** Level of service.
*** Volume-to-capacity ratio (for signalized intersections).

COMMENT #3 Although the construction workers would not depart during the evening peak hour (4-5 PM), they would still depart at a time when local traffic shows high volumes approaching peak hour volumes (see Figure 4). Therefore, their impact may not be insignificant.

RESPONSE Traffic volumes in the Longwood Medical Area are high between the hours of 1:00 PM and 6:00 PM. Figure 4, which is reproduced below, demonstrates that traffic volumes during the hour when construction workers end their work shift (3:00 to 4:00 PM) are slightly less than during the evening peak hour (4:00 to 5:00 PM). As described in the Draft PIR, the proposed parking location for construction workers who drive is the 49 Landsdowne Street garage. Workers will be shuttled between the garage and the construction site. The use of an off-site location will help to minimize the impacts of construction worker traffic in the vicinity of the hospital. Overall, the trips generated by construction workers who drive is relatively small (66 vehicle trips).

REVISED TRANSPORTATION ACCESS PLAN

BRIGHAM AND WOMEN'S HOSPITAL - CLINICAL SUPPORT FACILITY

Boston, Massachusetts

Prepared for:

Brigham and Women's Hospital
75 Francis Street
Boston, Massachusetts

Prepared by:

Vanasse Hangen Brustlin, Inc.
Engineers, Planners, and Scientists
101 Walnut Street
P.O Box 9151
Watertown, Massachusetts 02272

July 1991

CONTENTS

INTRODUCTION AND SUMMARY 1

The Site 1
The Development Proposal 1
Study Area 2
Study Methodology 3
Summary of Findings 3

EXISTING CONDITIONS 4

Traffic 4
Parking 8
Public Transportation 11

PROBABLE PROJECT IMPACTS 13

Traffic Impacts 13
Parking Impacts 22
Public Transportation Impacts 24
Construction Impacts 24

MITIGATION AND MONITORING 26

Introduction 26
Demand Management 26
Traffic Operations Improvements 28
Other Recommendations 29
Conclusion 29
Construction Management 30

INTRODUCTION AND SUMMARY

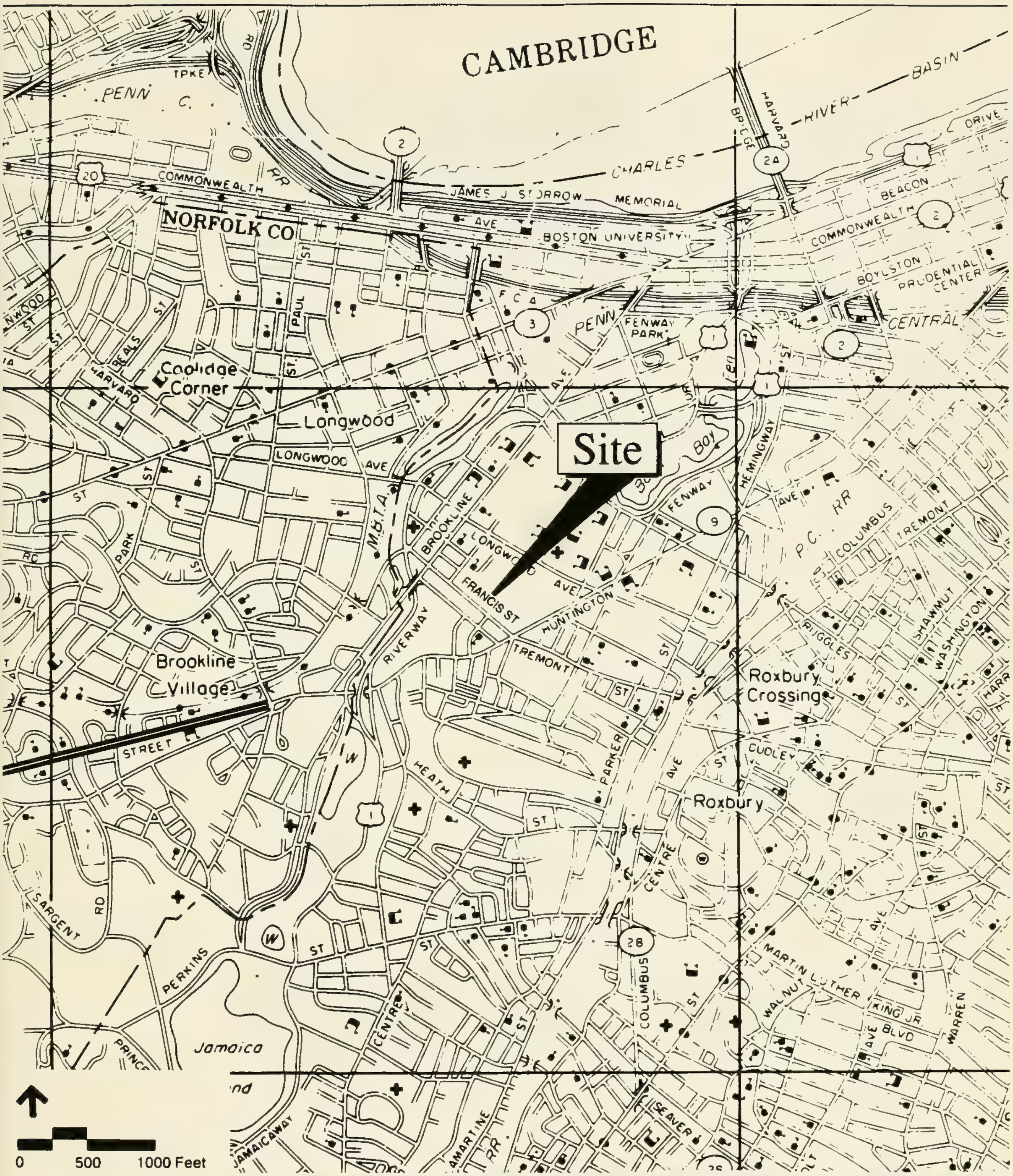
Brigham & Women's Hospital (BWH) is proposing to construct a 226,400 square feet (for FAR purposes), nine-story Clinical Support Facility primarily to house obstetrical services including a labor and delivery unit, a neonatal intensive care unit, ancillary offices and support staff areas, and an in-house hotel for patient's families. The majority of these services are already located elsewhere on campus in facilities of insufficient size to accommodate present and anticipated demand. The Clinical Support Facility will replace the 31,000 FAR square foot Tackaberry Building, which is currently located on the site. Services housed in the Tackaberry Building will be relocated elsewhere on the BWH campus following its demolition. As with the Tackaberry Building, a walkway bridge will connect the building to Children's Hospital; in addition, a connecting bridge will join the new building to the adjacent patient tower. This report addresses the transportation impacts of the proposed development, designated the Brigham & Women's Hospital Clinical Support Facility. The work described herein was conducted for BWH by Vanasse Hangen Brustlin, Inc. (VHB), based on a scope approved by the Boston Transportation Department (BTD) and the Boston Redevelopment Authority (BRA).

THE SITE

Brigham and Women's Hospital (BWH) is located in Boston's Longwood Medical Area (LMA). BWH's main campus, which includes the site of the proposed project, is bounded by Huntington Avenue, Binney Street, Francis Street, and Shattuck Street. The proposed project replaces the existing Tackaberry Building and is located on Shattuck Street. The project site location is shown in Figure 1.

THE DEVELOPMENT PROPOSAL

The project proposal calls for the demolition of the existing Tackaberry building on the site and the construction of approximately 226,400 FAR square feet of clinical support space. The services proposed to be housed in the facility are presented by floor in Table 1. The services include obstetrical services, a labor and delivery unit, a neonatal intensive care unit, ancillary offices, staff areas, and an in-house hotel for patients' families. The majority of these services are already located elsewhere on campus in facilities of insufficient size to accommodate present and anticipated demand. Existing uses of the space to be demolished will be relocated elsewhere on the BWH campus following its demolition. Total floor area on the site would increase from 31,000 FAR square feet to 226,400 FAR square feet, a net addition of 195,400 FAR square feet which includes a 30-room hotel. The hospital intends to



Vanasse Hangen Brustlin, Inc.

Locus Map

Figure 1

phase in the development over several years. In the Institutional Master Plan[1] completed by BWH in October 1989, this growth was taken into consideration and included in the overall growth projection for the hospital. Net new staff on the site, excluding the proposed hotel staff, is estimated at 54 physicians and 174 other employees.[2] No new on-site parking is proposed for the Clinical Support Facility.

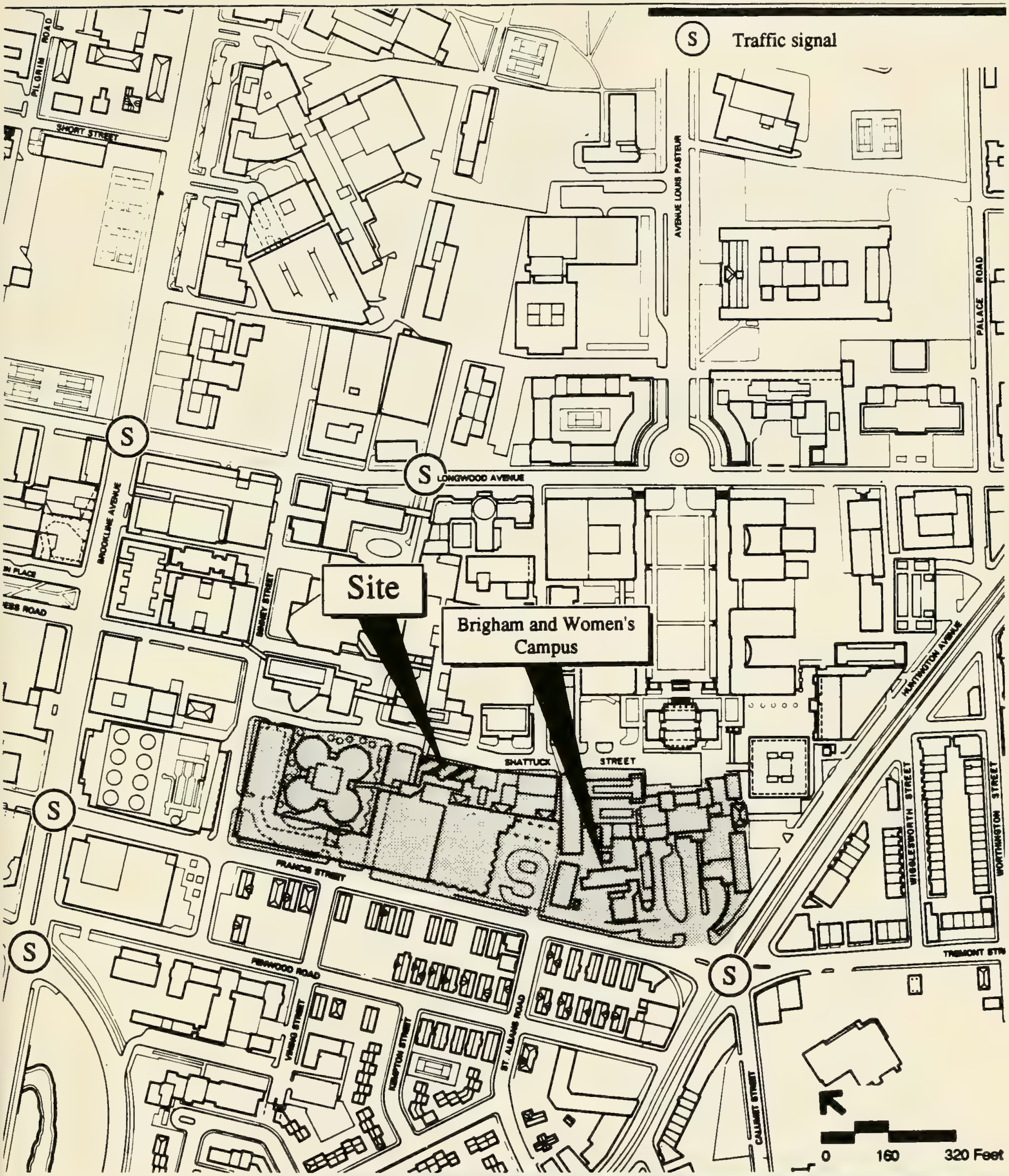
Table 1 **BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY PROGRAM**

Floor Level	Use
Level 9	Hotel
Level 8	Medical Faculty Offices
Level 7	Medical Faculty Offices
Level 6	Medical Faculty Offices
Level 5	Neonatal Intensive Care Unit
Level 4	Labor and Delivery
Level 3	OB Services, OB Triage, and Admitting
Level 2	Administration House Staff Areas
Ground Floor Level	Emergency Room, Administration
Level Minus 1	Non-Invasive Cardiology, Telecommunications
Level Minus 2	Biomedical Engineering/Mechanical

STUDY AREA

The study area defined by the Boston Transportation Department (BTD) for this project is shown in Figure 2. The intersection of Brookline Avenue and Francis Street, and the intersection of Huntington Avenue, Francis Street, and Tremont Street (Brigham Circle), as indicated in the figure, were analyzed for traffic impacts.

1/ Institutional Master Plan; Brigham and Women's Hospital (October 1989).
2/ Source: BWH Planning Department.



Vanasse Hangen Brustlin, Inc.

Project Area

Figure 2

STUDY METHODOLOGY

This transportation study was conducted in three distinct phases. Phase I involved an inventory of existing conditions and travel demand characteristics in the area. The inventory included researching previous transportation reports including the LMA Transportation Study,[3] as well as conducting new observations of area travel demands. New observations of traffic volumes and conditions were conducted in September and October 1990, during the morning and evening peak periods at the two analysis locations in the study area. Data collected during the inventory phase were assembled and used to define the existing transportation network as a base condition for subsequent analyses.

Phase II of the study built upon the database assembled in Phase I and established the framework for evaluating the transportation impacts of the proposed project. In this phase, specific travel demand forecasts for the project were assessed along with future demands projected to be created by other area developments. The year 1993, the target date for project occupancy, was selected as the analysis year.

Phase III, the final study phase, included evaluation of the impacts of the project on the transportation system, identification of measures to mitigate impacts, and development of a monitoring program.

SUMMARY OF FINDINGS

The project is expected to generate approximately 788 net new daily vehicle trips, of which approximately 57 are expected in the morning peak hour, while about 65 are expected in the evening peak hour. Two intersections near the project site were analyzed for traffic impacts. The analysis concluded that project traffic is expected to have no significant effect on traffic conditions. Traffic under No-Build and Build conditions in 1993 is expected to operate under deficient levels of service largely due to the impacts from background traffic in the Longwood Medical Area. The traffic conditions at the two intersections studied can be partly improved by relatively inexpensive measures like adjusting signal timing and phasing, coordinating the signals with adjacent intersections, and striping approach lanes.

The 788 net new daily vehicle-trips are expected to create a net new peak parking demand for 105 spaces, which include 75 employee and physician spaces, 24 patient and visitor spaces, and 6 hotel-related spaces. The new staff parking is expected to be accommodated in parking facilities at 375 Longwood Avenue and 49 Lansdowne Street. The patient, visitor, and hotel related parking is expected to be accommodated at the hospitals ASB II Garage and Service Center Garage.

The project site is located within one-quarter mile of four public transportation routes: the "E" branch of the MBTA Green Line and MBTA Bus Routes 39, 47, and 47A. The project is expected to generate approximately 176 net new transit trips daily, including about 40 in the morning peak hour and about 47 in the evening peak hour. When distributed among the various transit routes serving the site, these new transit trips are expected to have no significant effect on public transportation conditions.

3/ Longwood Medical Area Transportation Study; Vanasse Hangen Brustlin, Inc. Technical Memorandum #1 (November 1987), Technical Memorandum #2 (April 1988), and Technical Memorandum #3 (May 1988).

TRAFFIC

The existing roadways within and adjacent to the study area consist of both local and arterial streets. Roadways in the study area traverse an urban environment influenced in part by the hospitals, schools, colleges of the Longwood Medical Area (LMA), and a mix of commercial and residential land uses. Roadway characteristics and traffic volumes were compiled to analyze existing conditions.

Roadway Network Characteristics

Francis Street is the focus of the analysis because it provides primary access to the project site. Francis Street is a 40-foot two-lane street located between Huntington Avenue and Brookline Avenue, providing access to the BWH campus. For the purpose of this study, Francis Street was designated as a east/west roadway, while all cross streets were designated north/south. Restricted parking for neighborhood residents is provided along the southern side of the street. Metered spaces and a taxi stand are provided on the northern section of the street near the BWH main entrance. The capacity of Francis Street in the area is controlled by the two signalized intersections, one at Francis Street, Huntington Avenue, and Tremont Street, and the other at Francis Street and Brookline Avenue. Both signalized intersections along Francis Street were studied to assess the impacts of the proposed project.

Huntington Avenue is a four-lane arterial near the study area. Huntington Avenue north of Francis Street is a divided road with a wide median which provides a reserved right-of-way for the MBTA's Green Line trolleys. On the southern side, Huntington Avenue is an undivided, four-lane road with moving traffic sharing the right-of-way with the MBTA's Green Line trolleys. Metered parking is provided on both sides of Huntington Avenue, with the exception of southbound approach. There are MBTA bus stops on the southbound approach and northbound departure. MBTA's Brigham Circle station is located on Huntington Avenue median north of Francis Street. The portion of Huntington Avenue between South Huntington Avenue and Brigham Circle was recently reconstructed.

Brookline Avenue which borders the study area on the west is in general a four-lane arterial with parking permitted in some areas and additional turning lanes provided at some intersections. In the vicinity of Francis Street, Brookline Avenue's southbound approach is two lanes with metered parking, and it opens to three lanes on the southbound departure side. Brookline Avenue northbound is two lanes wide at the approach to the intersection. In addition, four parking meters were recently

removed near the approach to facilitate the right turns. The northbound departure has two travel lanes with metered parking along the curb.

Existing Traffic Volumes

Morning (7:15 to 9:15 AM) and evening (4:00 to 6:00 PM) peak period traffic turning movement and vehicle classification counts were conducted during the last week of September 1990 at the intersections of Francis Street with:

- Brookline Avenue
- Huntington Avenue

The morning and evening peak hour volumes are presented in Figure 3. Automatic traffic recorder (ATR) counts were also conducted, for a period of 24 hours to identify traffic patterns through the course of the day, during the same week on:

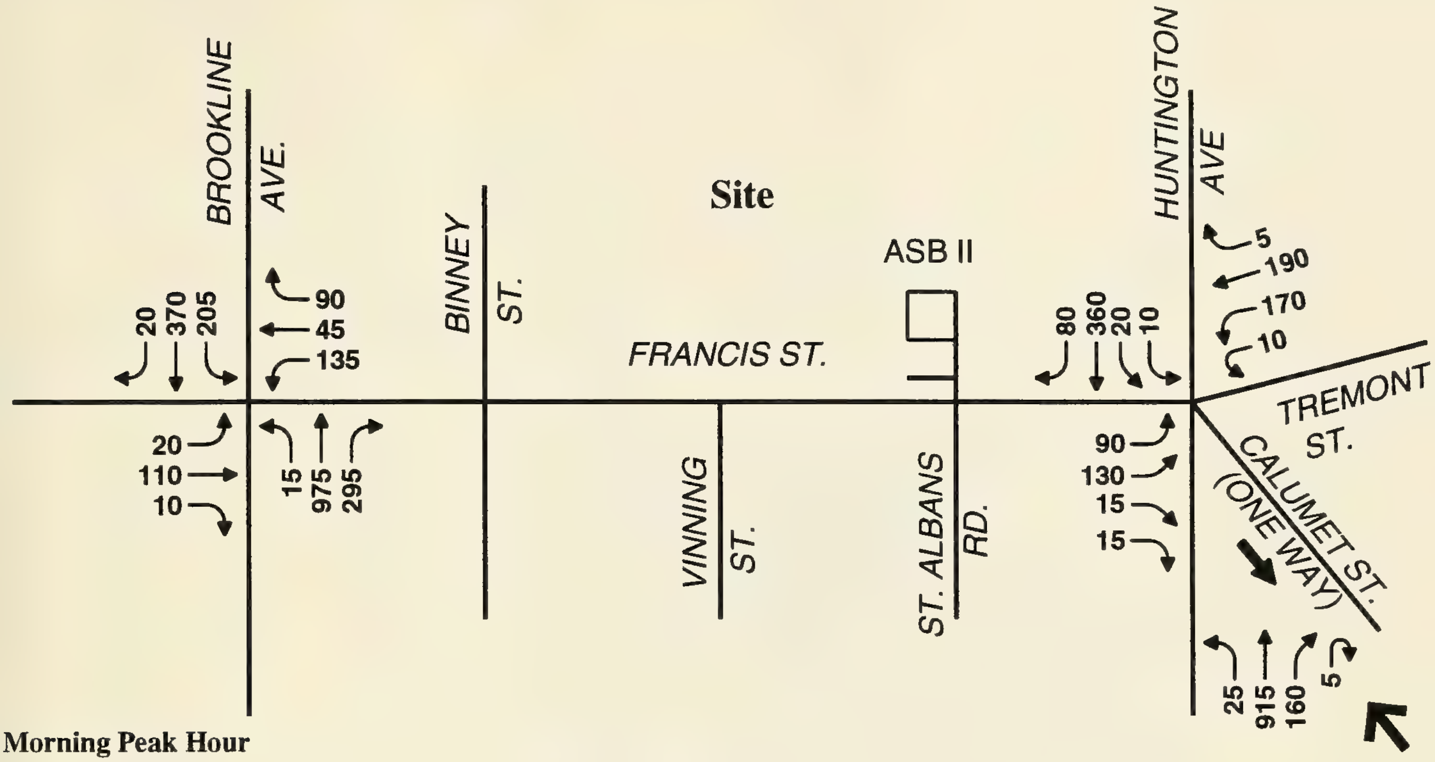
- Francis Street (between Vinning Street and St. Albans Road)
- Huntington Avenue (north of Francis Street)
- Brookline Avenue (north of Francis Street)
- Riverway (north of Francis Street)

The average weekday daily traffic volumes at these locations are presented in Table 2. In addition, the data for Francis Street is presented graphically in Figure 4. As shown in Figure 4, traffic on Francis Street peaks in the evening between 4:00 and 5:00 PM and peaks in the morning between 8:00 and 9:00 AM. Volumes on Francis Street are consistently in the range of 600 vehicles per hour or more between 7:00 AM and 6:00 PM.

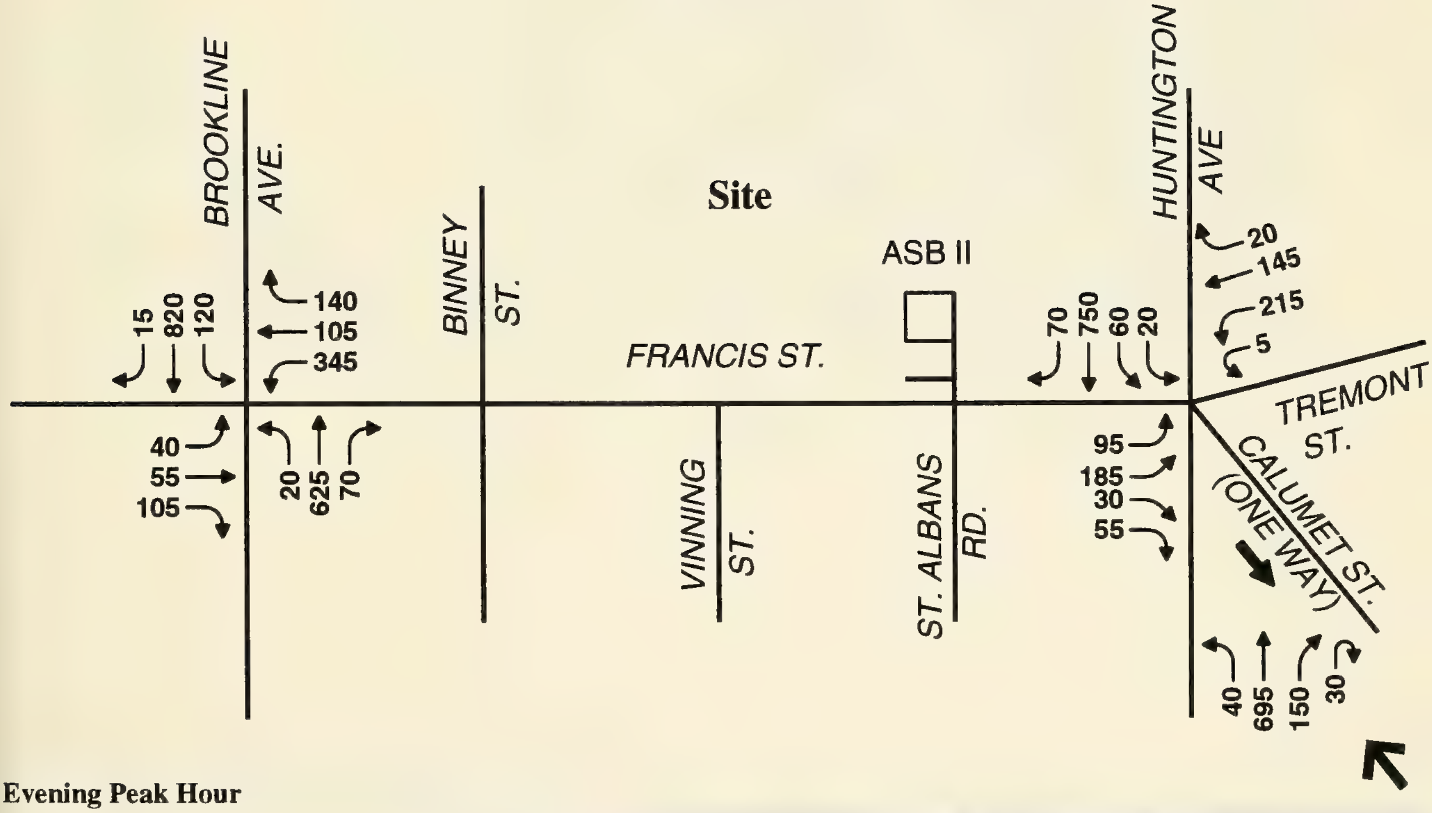
Table 2 **EXISTING TRAFFIC VOLUMES***

Location		AWDT	Morning Peak Hour	Percent of AWDT	Evening Peak Hour	Percent of AWDT
Francis Street west of St. Albans Road		10,436	729	6.9	704	6.7
Huntington Avenue	- NB	12,996	1,075	8.3	936	7.2
north of	- SB	12,732	584	4.6	1,031	8.1
Francis Street	- Total	25,728	1,659	6.4	1,967	7.6
Brookline Avenue north of Francis Street		28,301	1,794	6.3	1,909	6.7
Riverway north of Francis Street		28,852	2,088	7.2	2,235	7.7

* Counts conducted on September 26, 1990.



Morning Peak Hour

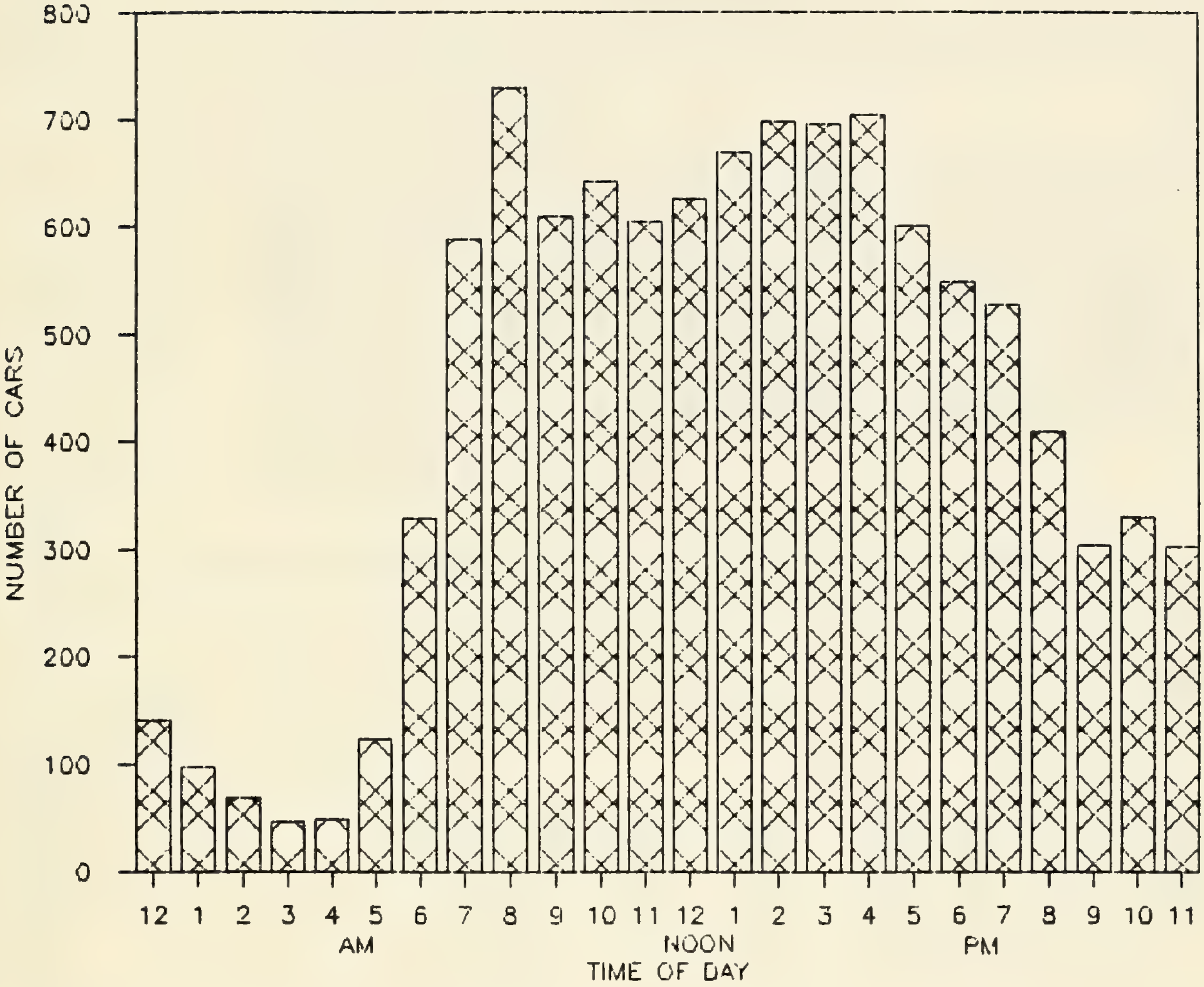


Evening Peak Hour

Vanasse Hangen Brustlin, Inc.

Existing
Peak Hour
Traffic Volumes

Figure 3



Note:
Automatic Traffic Recorder Counts W ere Conducted
During The Week of September 26, 1990.

Vanasse Hangen Brustlin, Inc.

Temporal Distribution of
Traffic Volumes
Francis Street

Figure 4

To develop existing traffic volume networks, it is necessary to compare the raw counts provided in the Appendix with each other, with counts that were conducted in the area during the same period, and with historical counts and to adjust the counts to resolve any obvious discrepancies. In this study, no such adjustments were required except at the intersection of Francis Street and Brookline Avenue in the evening peak hour. The southbound through volume at this intersection was increased (by 50 vehicles) to reconcile that volume with a 1987 count at that location and with the count at the Longwood Avenue and Brookline Avenue intersection, conducted in September 1990.

The approach volumes at both the intersections were compared with previous 1987 traffic counts, which are based on the LMA Transportation Study.[4] Table 3 presents the comparison for the morning and evening peak hour traffic volumes. The 1990 traffic volumes have increased for some approaches while others have decreased when compared to the 1987 volumes. The most significant change in the traffic volume is for Francis Street westbound traffic (+131) and the Huntington Avenue southbound traffic (+155) in the evening peak hour. The total evening peak hour traffic has increased by 2.4 percent at the intersection of Brookline Avenue and Francis Street, and has increased by 5.7 percent at Brigham Circle. The traffic volume changes in the morning peak hour at both locations show virtually no change from the 1987 observations.

Table 3 STUDY AREA INTERSECTIONS 1987* AND 1990 VOLUME COMPARISON**

Location	Morning Peak Hour				Evening Peak Hour			
	1987	1990	Diff.	% Diff.	1987	1990	Diff.	% Diff.
Brookline Avenue and Francis Street:								
Northbound	1,225	1,284	+59	+4.8	685	713	+28	+4.1
Southbound	610	592	-18	-3.0	1,000	955	-45	-4.5
Eastbound	155	137	-18	-11.6	255	199	-56	-25.1
Westbound	290	270	-20	-6.9	460	591	+131	+28.5
TOTAL	2,280	2,283	+3	0.0	2,400	2,458	+58	+2.4
Huntington Avenue, Francis Street, and Tremont Street:								
Northbound	1,050	1,109	+59	+5.6	885	914	+29	+3.3
Southbound	480	445	-35	-7.3	750	900	+150	+20.0
Eastbound	335	250	-85	-25.3	400	366	-44	-8.5
Westbound	330	374	+44	+13.3	395	389	-6	-1.5
TOTAL	2,195	2,178	-17	0.0	2,430	2,569	+139	+5.7

* Based on Longwood Medical Area Transportation Study, Technical Memorandum #1, by Vanasse Hangen Brustlin, Inc. (November 1987).

** September 25 and 27, 1990.

4/ Longwood Medical Area Transportation Study, Technical Memorandum #1; Vanasse Hangen Brustlin, Inc. (November 1987).

Table 4 indicates a similar comparison of two daily counts on Francis Street (a September 1990 count at Francis Street west of St. Albans Road and a November 1989 count on Francis Street west of Vinning Street). The September 1990 count on Francis Street was found to be slightly lower than the 1989 count.

Table 4

AVERAGE WEEKDAY DAILY TRAFFIC (AWDT) VOLUME COMPARISON ON FRANCIS STREET

Location	November 1989 AWDT	September 1990 AADT
Francis Street west of St. Albans Road		10,436
Francis Street west of Vinning Street	10,700	

Existing Traffic Conditions

As part of this study, observations of morning and evening peak period traffic conditions were made at both the analysis locations. These observations complement the counts mentioned above and the formal analysis presented in the Probable Project Impacts section later in the report.

Francis Street, Huntington Avenue and Tremont Street (Signalized)

This intersection, also called Brigham Circle, experiences a considerable amount of activity in both the peak periods. The land use is commercial along the Huntington Avenue south of Francis Street and Tremont Street. The Brigham Circle MBTA station which is located at this intersection, generates relatively high pedestrian volumes crossing Huntington Avenue. The pedestrian activity increases when a train stops at the station. Although most of the pedestrians cross during the pedestrian phase which is actuated by a push button, some pedestrians were observed (around 300 in the morning peak hour and 400 in the evening peak hour) crossing and conflicting with right-turning traffic.

The center of the intersection has a large open space, which provides a two to four-car storage area for left-turning vehicles without blocking through traffic during the green intervals. Huntington Avenue was observed to experience relatively little delay during both peak periods, however, operations can be affected by the Green Line trains that pass through the intersection.

Francis Street eastbound at this intersection was observed to have relatively long queues (fifteen to twenty cars) and delays during the evening peak hour. The intersection was observed to process an average of twelve cars eastbound every cycle. This is because green time for this approach is lost due the interference from the left-turning traffic from Tremont Street. In the morning peak hour, the delays were observed to be minimal. Relatively smaller delays were observed for Tremont Street traffic in both the peak periods.

Francis Street and Brookline Avenue (Signalized)

In the evening peak period the Brookline Avenue southbound traffic experiences long delays. The southbound traffic from the intersection of Brookline Avenue and the Riverway backs up to the Francis Street intersection almost every cycle. As a result, green time is lost for the Brookline Avenue southbound traffic, causing traffic delays. Because of these queues, drivers turning left from Francis Street westbound also experience delays during peak evening periods. In the morning peak hour, although the green time is lost due to poor coordination, delays are minimal as the queued traffic can clear on each cycle.

Recently, portions of Brookline and Longwood avenues were restriped by the city of Boston's Transportation Department as a result of recommendations made in the areawide LMA study. The restriping of Brookline Avenue eliminated on-street parking and provided turning lanes at the Longwood Avenue intersection. Four parking meters were also removed from the northbound Brookline Avenue approach to Francis Street to facilitate right turns. Illegal parking activity has affected the capacity of this lane during the peak periods.

PARKING

A detailed parking study was originally conducted for the BWH Transportation Master Plan.[5] Included in the master plan is a detailed study of the existing parking supply and demand for the entire hospital, which includes the Tackaberry Building at the proposed project site. Projections of future parking demand in the master plan included projections for the proposed Clinical Support Facility (CSF) project. This study updates the information on parking supply as reported in the Master Plan, to reflect the currently existing supply. In addition, parking utilization data for the Service Center Garage and the ASB II Garage were collected for this study. This study estimates the incremental parking impacts of the proposed project and as result focuses on the parking issues only as they relate to the CSF.

Parking Supply

Based on the information provided by the BWH, as of October 1990 there were approximately 2,362 off-street marked parking spaces currently under the control of BWH and available for use by its staff, patients, and visitors. The majority (2,082) of these spaces are reserved for staff. The remaining spaces are housed in the ASB II Garage, located below-grade on Francis Street at the BWH Ambulatory Services Building and in the West Plaza. These spaces are available for patients and visitors. As compared to the March 1989 supply, BWH has acquired additional spaces for staff parking. These include 17 additional spaces at the Service Center Garage, 50 additional spaces at Back Bay Manor, the loss of 20 spaces at the Massachusetts College of Art lot on Longwood Avenue, and the loss of 15 spaces at Wentworth. These new additional spaces were acquired by the hospital in part to compensate for losing spaces and in anticipation of some growth at the hospital.

Table 5 provides a listing of BWH's parking facilities with their respective number of marked spaces. The largest supply of staff parking is in the Mission Park Garage, which has 1,250 marked spaces. BWH staff parking is assigned by facility, and key-cards are issued to parkers.

---

[5] Institutional Master Plan; Brigham and Women's Hospital (October 1989).

Table 5 BWH STAFF PARKING FACILITY ASSIGNMENT AS OF OCTOBER. 1990*

Facility	Number of Marked Spaces
Staff Parking	
Service Center Garage	202
Mission Park Garage	1,250
Peter Bent Brigham Front	26
Calumet Street Lot	55
Back Bay Manor	50**
Vin/Fen Lot (Vinning Street and Fenwood Road)	55
Shattuck Street***	40
49 Landsdowne Street	225
Wentworth	170
West Plaza	9
Subtotal	2,082
Visitor Parking:	
West Plaza+	40
ASB II Garage	240
Subtotal	280
TOTAL	2,362

* Source: BWH parking office.

** BWH has agreed to phase these 50 spaces out at a rate of 10 per year over the next 5 years.

*** Out of the 40 spaces, 19 spaces are reserved and 21 spaces are for contractors.

+ These 40 spaces are primarily used for short-term dropoffs, pickups and deliveries.

No special preference is given to match the work location or residence location with the closest parking facility. Between 6:00 AM and 10:00 AM, only card holders are admitted to the Mission Park Garage. During all other times, any employee with a valid hospital ID may enter the facility. These facilities are generally used by day-shift and evening-shift employees. Night-shift (11:00 PM to 7:00 AM) employees are encouraged to use the ASB II Garage.

In addition to these two major facilities controlled by the hospital, two other parking areas which the hospital owns should be mentioned: the Vin/Fen Lot and the West

Plaza. The Vin/Fen lot on the corner of Vinning Street and Fenwood Road is used primarily by physicians. Very few monthly parkers are assigned to this location, but 570 people (primarily physicians) have key cards for this 55-space facility. These individuals are billed for parking at an hourly rate.

The West Plaza area near the hospital main entrance has 49 parking spaces mostly of which are available for short-term drop-offs, pick-ups, and deliveries. This area is patrolled by security guards who screen drivers at the entrance and direct them to an appropriate parking space in the West Plaza or elsewhere. The remaining 9 spaces are for staff parking.

In addition to the parking spaces controlled by the BWH, there are several other parking facilities in the vicinity of the proposed project which provide public parking for patients and visitors. These facilities include the Service Center Garage (operated by MASCO) and the 110 Francis Street Garage (Deaconess Hospital). The Service Center Garage, which is on Francis Street diagonally opposite the BWH main campus, has 650 marked parking spaces, of which 202 spaces are reserved for BWH employees. The 110 Francis Street garage which is at at the southwest corner of the intersection of Francis Street and Brookline Avenue has 310 parking spaces, one-half of which are open to the public and the other half reserved for monthly New England Deaconess parkers.

Parking Utilization

A detailed parking utilization study was conducted for the BWH Master Plan and included the Mission Park Garage, the ASB II Garage, and the West Plaza. New parking utilization information was collected for the Service Center Garage and the ASB II Garage utilization information was updated in order to determine the availability of parking in these two facilities for patients and visitors to the new BWH Clinical Support Facility (CSF).

Service Center Garage

The total parking supply at the Service Center Garage is 650 spaces, of which 202 spaces are leased to BWH. Parking accumulation information for three weekdays (September 25, 1990 to September 27, 1990, 7:00 AM to 4:00 PM) was obtained from MASCO. Based on this information, the accumulation in the garage between 9:00 AM and 4:00 PM is relatively constant, with less than 50 spaces available for parking. Typically during the peak accumulation hour (2:00 PM to 3:00 PM) there are on average 8 spaces available for parking and during the midday peak (11:00 AM to noon) there are an average 10 empty spaces.

ASB II Garage

Parking utilization counts are conducted on a regular basis at the 240-space ASB II Garage. The parking accumulation data for six weekdays (September 11, 1990 to September 13, 1990 and September 24, 1990 to September 26, 1990) was provided by BWH. The volume in the garage begins building at around 8:00 AM; at that time there are approximately 100 vehicles parked in the garage. The parking accumulation for the ASB II Garage is fairly constant between 10:00 AM and 4:00 PM, and begins to taper off in the subsequent hours. Typically there are not more than 50 spaces available for parking between 10:00 AM and 4:00 PM. The

weekday data collected shows a small increase in the number of parkers during the evening hours, probably representing patient visitors. At midnight there are on average 182 vehicles parked. Between midnight and 6:00 AM the garage is closed, although cars are allowed to leave it.

The hospital indicated that Tuesday and Thursday are generally busy days due to heavy ambulatory surgery schedules. Based on the information provided by the hospital on a typical weekday, there are typically 15 spaces available during the mid day hours and on average of 9 unoccupied spaces at 3:00 PM.

PUBLIC TRANSPORTATION

The Massachusetts Bay Transportation Authority (MBTA) operates six bus routes and one light rail line within one-quarter mile of the project site. Another light rail line is located slightly more than one-half mile from the site. These MBTA routes, illustrated in Figure 5, are described below:

- Bus Route 8 operates at 30-minute intervals between Kenmore Square and Harbor Point (Dorchester), with high-frequency supplemental rush-hour service between Kenmore Square and Ruggles Station. Ruggles Station is served by twelve bus routes as well as rapid transit (Orange Line) and commuter rail. Route 8 stops near the corner of Longwood Avenue and Binney Street.

- Bus Route 39 operates at 10-minute or shorter intervals between Back Bay Station in Boston and Forest Hills Station in Jamaica Plain, with a stop at Brigham Circle.

- Bus Route 47 operates at 20-minute intervals between Central Square in Cambridge and Boston City Hospital, via Ruggles Station, with a stop near the corner of Longwood Avenue and Binney Street.

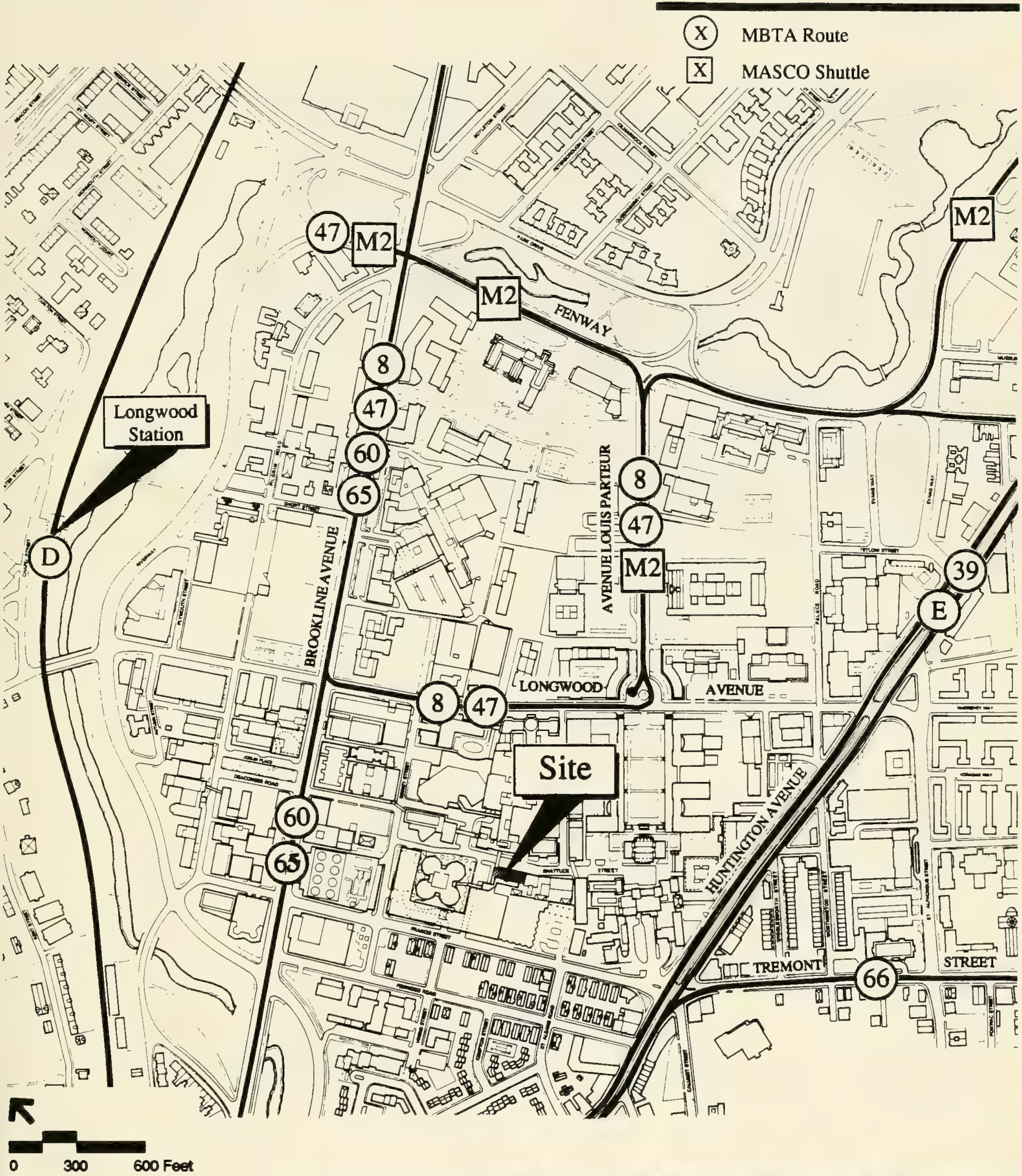
- Bus Route 60 operates at 20-minute intervals between Kenmore Square and Chestnut Hill in Newton, serving all stops along Brookline Avenue.

- Bus Route 65 operates at 25-minute intervals between Kenmore Square and Brighton Center, serving all stops along Brookline Avenue.

- Bus Route 66 operates at 14-minute intervals between Dudley Square in Roxbury and Harvard Square in Cambridge, with a stop at Brigham Circle. Service during rush hours is scheduled at 9-minute intervals.

- The Arborway (E) branch of the MBTA Green Line currently runs from Lechmere Square in Cambridge through downtown Boston to the Heath Street Loop in Jamaica Plain, with a stop at Brigham Circle. The downtown stations provide connections to other rapid transit and commuter rail lines. Service on the portion of the line between Heath Street and the Arborway (adjacent to Forest Hills Station in Jamaica Plain) was suspended five years ago and replaced temporarily with Bus Route 39. Streetcars on the E branch typically operate at 5- to 10-minute intervals.

- The Riverside (D) branch of the MBTA Green Line runs from downtown Boston to Riverside Station in Newton, with a stop at Longwood Station, just over one-



Area Public Transportation System

Figure 5

> half mile from the project site. The downtown stations provide connections to other rapid transit and commuter rail lines, while the outlying stations offer park-and-ride facilities to serve residents of more distant suburbs. Service typically operates at 5- to 10-minute intervals. The MBTA is currently upgrading the Riverside Line power system to allow extensive use of three-car trains during peak hours.

The scheduled capacity on all these routes is generally adequate for the number of passengers carried. However, a number of factors, including area traffic congestion, sometimes prevent scheduled service from being delivered. This results in overcrowding on some vehicles during peak periods. It is expected that planned improvements to the power system on the Green Line and the recent improvements to traffic flow conditions on area streets will help reduce the incidence of overcrowding on area public transportation routes.

The Medical Area Service Corporation (MASCO) operates a shuttle (Route M2) to Harvard Square in Cambridge. This route may be boarded at the intersection of Longwood Avenue and Avenue Louis Pasteur, less than one-quarter mile from the project site. MASCO also operates shuttle bus service to off-site parking facilities.

TRAFFIC IMPACTS

Site Design Analysis

The project site is well designed from a traffic viewpoint. The main entrance to the CSF building will be at 75 Francis Street, which is the current main entrance to the hospital. Pick-up and drop-off activities typically occur within the West Plaza on the site rather than on Francis Street. The proposed project provides emergency vehicle parking and a turn-around area at grade level which is accessible via Shattuck Street. This entrance also serves the emergency area located in the complex. The existing on-site traffic circulation system is expected to remain the same when the project is completed, and it appears that this system will be able to handle the moderate increase in pick-up and drop-off activity that is anticipated without adverse effects on Francis Street.

Loading

No dedicated on-site loading dock within the CSF is proposed for project related deliveries. All BWH deliveries are now directed to the service center loading dock. To supplement and allow for overnight deliveries, the hospital will add two loading bays in the West Plaza to provide direct supply to the patient tower (and the CSF). A material handling system is planned to allow the West Plaza loading dock to service the building. The modest increase in the truck deliveries resulting from the project is expected to have little impact on the Binney Street or the Shattuck Street which have relatively low traffic volumes.

Trip Generation

The isolated transportation impacts of the Clinical Support Facility (CSF) were separated from the general impacts presented in the Transportation Master Plan.

Estimates were made for the number of persons arriving on a typical weekday, the incremental daily vehicle trips, and peak parking demand.

An extensive survey of staff members, patients, and visitors was conducted in conjunction with the transportation master plan completed in April 1989.[6] This survey determined time of arrival and departure, mode split, and vehicle occupancy rate by user category. The study identified the number of persons by user category who come to the hospital on a typical weekday. An extensive database was established from the 2,489 survey responses received and was used as the basis for determining travel characteristics associated with the CSF.

It is assumed in this study that the travel characteristics of the CSF would be similar to that of the BWH travel characteristics (estimated based on the 1988 survey). The hotel component is treated separately because it is a new use and is therefore, not reflected in the 1988 hospital survey. Staffing estimates have not been developed for the hotel; instead, standard transportation forecasting techniques were applied to estimate daily vehicle trips and peak parking demand.

New Project Staff

Based on the information provided by BWH and as stated in the Notice of Project Change,[7] BWH expects a staff increase of 54 staff physicians and 174 employees, as shown in Table 6. The remaining offices will be used mainly for existing active staff physicians who currently occupy either overcrowded or outmoded offices on the BWH campus or office space which will be converted to clinical use to relieve overcrowding in clinical facilities. Based on this information and the patterns emerging from the 1988 hospital survey, 487 net additional persons (excluding the trips generated by the hotel) are expected to come to Brigham & Women's Hospital on a typical weekday.

---

[6] Transportation Master Plan; Brigham and Women's Hospital; Vanasse Hangen Brustlin, Inc. (April 1989).

[7] Notice of Project Change; submitted to the Commonwealth of Massachusetts' MEPA Unit (May 10, 1990).

Table 6 CLINICAL SUPPORT FACILITY DAILY VEHICLE TRIP GENERATION

Category	Net New Staff*	Net New Persons on Typical Weekday**	Net New Daily Vehicle Trips**
Physicians:			
Active Staff	44	22	32
Resident	10	7	7
Subtotal	54	29	39
Employees:			
Registered Nurse	95	65	92
Licensed Practical Nurse	9	9	14
Technician	14	10	9
Secretary/Clerical	32	29	30
Support	24	21	14
Subtotal	174	134	159
Patients:			
In-Patients	N/A	11	26
Out-Patients	N/A	187	270
Subtotal	N/A	198	296
Visitors:			
Patient Visitors	N/A	110	121
Business Visitors	N/A	16	27
Subtotal	N/A	126	148
TOTAL	N/A	487	642
Hotel	N/A	N/A	146
TOTAL INCLUDING HOTEL			788

* Source: BWH Planning Department.

** Based on relationships established in the Transportation Master Plan (April 1989).

N/A = not applicable.

CSF Vehicle-Trip Generation

The daily vehicle trips presented in Table 6 were calculated for each category of campus user by multiplying the incremental increase of those present on a typical day by the percentage of persons reported arriving by car, dividing by vehicle occupancy rate (1.3 persons per vehicle for staff), and multiplying by 2 for arriving and departing trips. Drop-off trips were doubled again to account for the drop-off and pick-up of passengers.

Based upon data collected in conjunction with the hospital Transportation Master Plan, approximately 642 additional new daily vehicle trips are expected due to the CSF (excluding the hotel). Patients generate the greatest number of vehicle trips (296), partially due to the number who are dropped off and picked up.

Hotel Component

Based on information from the 162-room Inn At Children's, which mainly serves families of hospital patients, the Longwood Medical Area (LMA) Transportation Study[8] concluded that hotel trip generation rates published by the Institute of Transportation Engineers (ITE)[9] should be reduced by 60 percent before being applied to this type of hotel in the LMA. This adjustment is necessary because many trips that would normally be made by vehicle at a typical hotel are made on foot in the LMA. Also, a typical hotel offers restaurants and conference facilities which are not provided at the Inn At Children's nor envisioned at the proposed BWH facility. Following the guidance of the LMA Transportation Study, an estimated 146 new daily vehicle trips were projected for the 30-room hotel.

Including the vehicle trips projected for the hotel, an increase of 788 daily vehicle trips (394 arriving and 394 departing) are expected for the project as a whole.

Peak Hour Vehicle Trips

The percentage of daily project traffic was estimated for the morning and evening peak-hours based on the BWH employee, patient, and visitor conducted by VHB in 1988. The survey results included vehicle trips (arriving and departing) by time of the day, for each employee, patient, and visitor category, as a percent of daily vehicle trips. Similar arrival and departure patterns were assumed for the new staff and visitors of the proposed CSF building, to estimate the morning and evening peak hour project traffic. Table 7 shows the morning and evening peak hour traffic generated by the proposed project.

8/ Longwood Medical Area Transportation Study, Technical Memorandum No. 2; Vanasse Hangen Brustlin, Inc. (April 1988).

9/ Trip Generation, Fourth Edition; Institute of Transportation Engineers (1987).

Table 7 PEAK HOUR PROJECT VEHICLE-TRIP GENERATION

Category	Net New Daily Vehicle Trips	Morning Peak Hour In	Morning Peak Hour Out	Evening Peak Hour In	Evening Peak Hour Out
Physicians*:					
Active Staff	32	7	0	0	1
Resident	7	1	0	0	0
Subtotal	39	8	0	0	1
Employees*:					
Registered Nurse	92	5	4	0	7
Licensed Practical Nurse	14	2	0	0	2
Technician	9	1	0	0	2
Secretary/Clerical	30	5	0	0	8
Support	14	1	0	0	1
Subtotal	159	14	4	0	20
Patients*:					
In-Patients	26	1	1	1	1
Out-Patients	270	14	8	14	9
Subtotal	296	15	9	15	10
Visitors:					
Patient Visitors	121	2	0	5	5
Business Visitors	27	1	0	0	2
Subtotal	148	3	0	5	7
Hotel**	146	3	1	4	3
TOTAL	788	43	14	24	41

* Based on 1988 Brigham & Women's staff, visitor, and patient survey.

** Based on adjusted ITE trip rates for a slightly larger hotel than the currently proposed 30 rooms.

Trip Distribution and Assignment

Once the volume of traffic generated by the project is known, the next step is to determine the travel routes they would follow to travel to and from their parking location. As stated earlier, the BWH is not planning to build additional parking at or near the site to accommodate project parking needs. Instead, the BWH intends to handle its staff parking needs at the following locations:

- MASCO Mixed Use Development (375 Longwood Avenue) - 46 spaces
- 49 Landsdowne Street - 75 spaces[10]

---

[10] Based on information provided by BWH.

It is expected that visitors and patients generated by the project, as well as hotel patrons, would park in the areas of public parking facilities, most notably the Service Center and ASB II.

The project-generated vehicle trips in the morning and evening peak hours were assigned to the area roadway system based on information presented in the Longwood Medical Area Transportation Study. The vehicle-trip distributions are presented in Table 8. Work trips and non-work trips were distributed separately because the geographic distribution of LMA workers is different from that of patients and visitors. It was assumed that all physician and employee trips in the peak hours are work related, and all patient, visitor, and hotel trips are non-work related.

Table 8 **DISTRIBUTION OF WORK AND NON-WORK TRIPS**

	Work		Non-Work	
	Morning	Evening	Morning	Evening
Jamaicaway	24%	22%	26%	13%
Route 9 West	21%	24%	16%	21%
Longwood Avenue and Park Drive West	24%	19%	15%	23%
Kenmore Square, Storrow Drive and Massachusetts Turnpike	22%	19%	36%	34%
All Others	9%	16%	7%	9%
TOTAL	100%	100%	100%	100%

Background Traffic Growth

To assess traffic conditions in 1993, it is necessary not only to forecast project-related traffic increases, but also to predict increases in background traffic. Growth in background traffic is a function of other development activity expected within the area. This growth can be projected by the application of a generalized growth factor or by the assessment of specific development proposals. For this analysis, the projection of background or No-Build traffic (i.e., future traffic without the CSF development) was based mainly on the LMA Transportation Study conducted for MASCO.[11] The LMA traffic growth forecast from 1987 to 1992 was used as

---

11/ Longwood Medical Area Transportation Study, Technical Memorandum #2, Five-Year Growth Horizon; Vanasse Hangen Brustlin, Inc. (April 1988).

background traffic. In addition, estimated traffic from the proposed Olmsted Plaza project[12] and the proposed Southeast Building at Beth Israel Hospital[13] was included for background traffic as these projects were not included in the LMA transportation study growth forecasts. It should be noted here that the project-generated traffic assigned to the 375 Longwood Avenue Garage has been double counted as this traffic is also a part of the growth forecast for 1992 LMA traffic.

Future Traffic Volumes

Peak hour traffic volumes were forecast for the analysis year (1993) under No-Build and Build conditions. The No-Build volumes which include growth forecasts from the LMA Transportation Study, the Olmsted Plaza project traffic, and the Southeast Building project traffic were added to the existing (1990) traffic volumes. The Build volumes were calculated by adding project-generated trips to the No-Build volumes. The results are presented in Figures 6 and 7.

Intersection Level of Service Analysis

Analysis Procedures

Signalized intersections were evaluated using computer programs based on procedures in the 1985 Highway Capacity Manual.[14] Signalized intersection analysis must consider a wide variety of prevailing conditions, including the amount and distribution of traffic movements, traffic composition, geometric characteristics, and the details of intersection signalization. Critical to the evaluation of signalized intersections are the concepts of capacity and level of service (LOS).

In this approach, capacity at intersections is defined for lane groups. A lane group, which may be a single movement, a group of movements, or an entire approach, is defined by the geometry of the intersection and the distribution of movements over the various lanes. Capacity (C) of a lane group is calculated as the maximum rate of flow which may pass through the intersection under prevailing traffic, roadway, and signalization conditions. The rate of flow (V) is generally measured or projected for a peak 15-minute period, and capacity is stated in vehicles per hour. Capacity analysis of intersections involves the computation of volume-to-capacity (v/c) ratios for each lane group, from which an overall intersection v/c ratio may be derived.

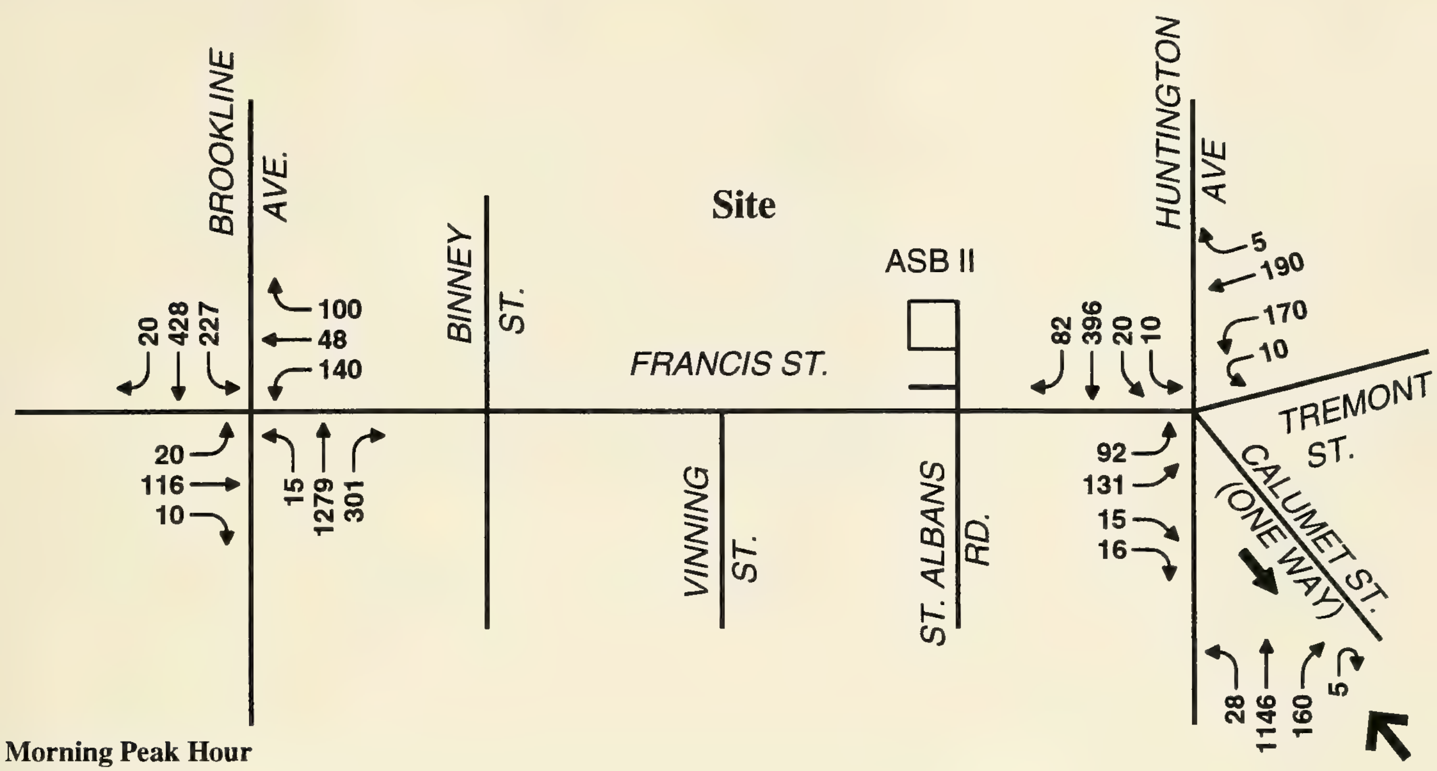
Generally, when two or more opposing flows are moving during a signal phase, one of the lane groups will require more green time than the other(s) in order to process all of its volume. This lane group would be defined as the critical lane group for the signal phase. The concept of a critical v/c ratio is used to evaluate the intersection

---

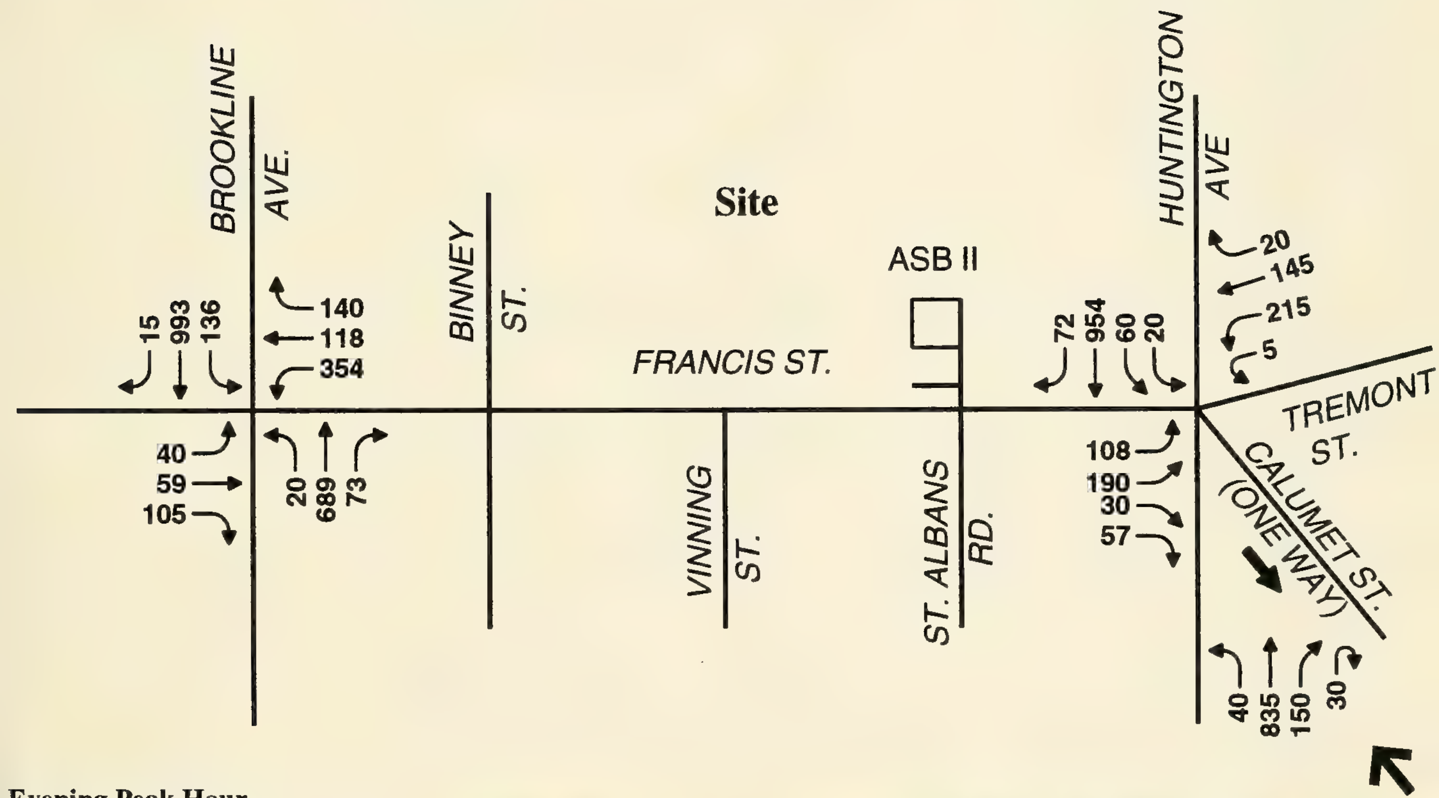
[12] DPIR/DEIR Olmsted Plaza (September 1989).

[13] Beth Israel Hospital Transportation Master Plan; EOEA #7406; Vanasse Hangen Brustlin, Inc. (September 1989).

[14] Highway Capacity Manual, Special Report 209; Transportation Research Board, Washington, DC (1985).



Morning Peak Hour

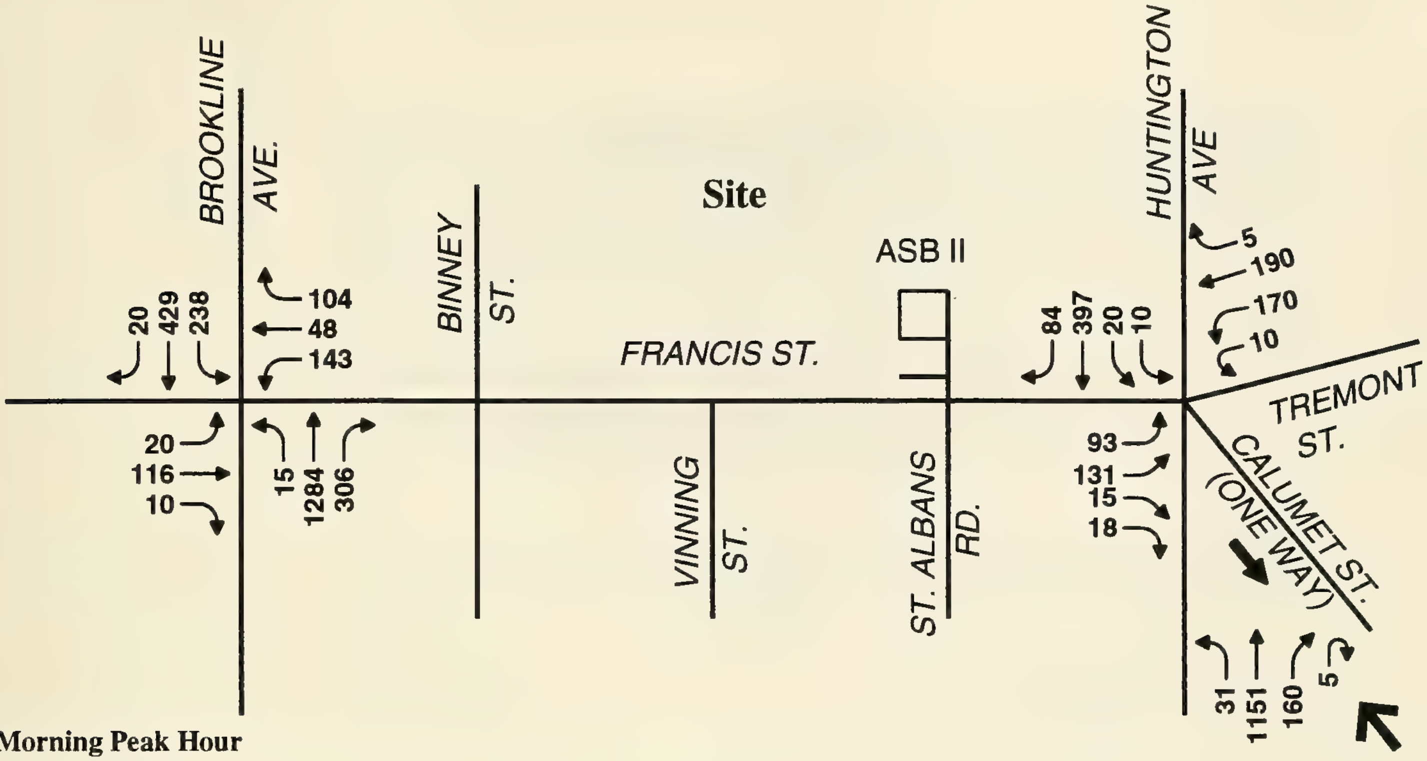


Evening Peak Hour

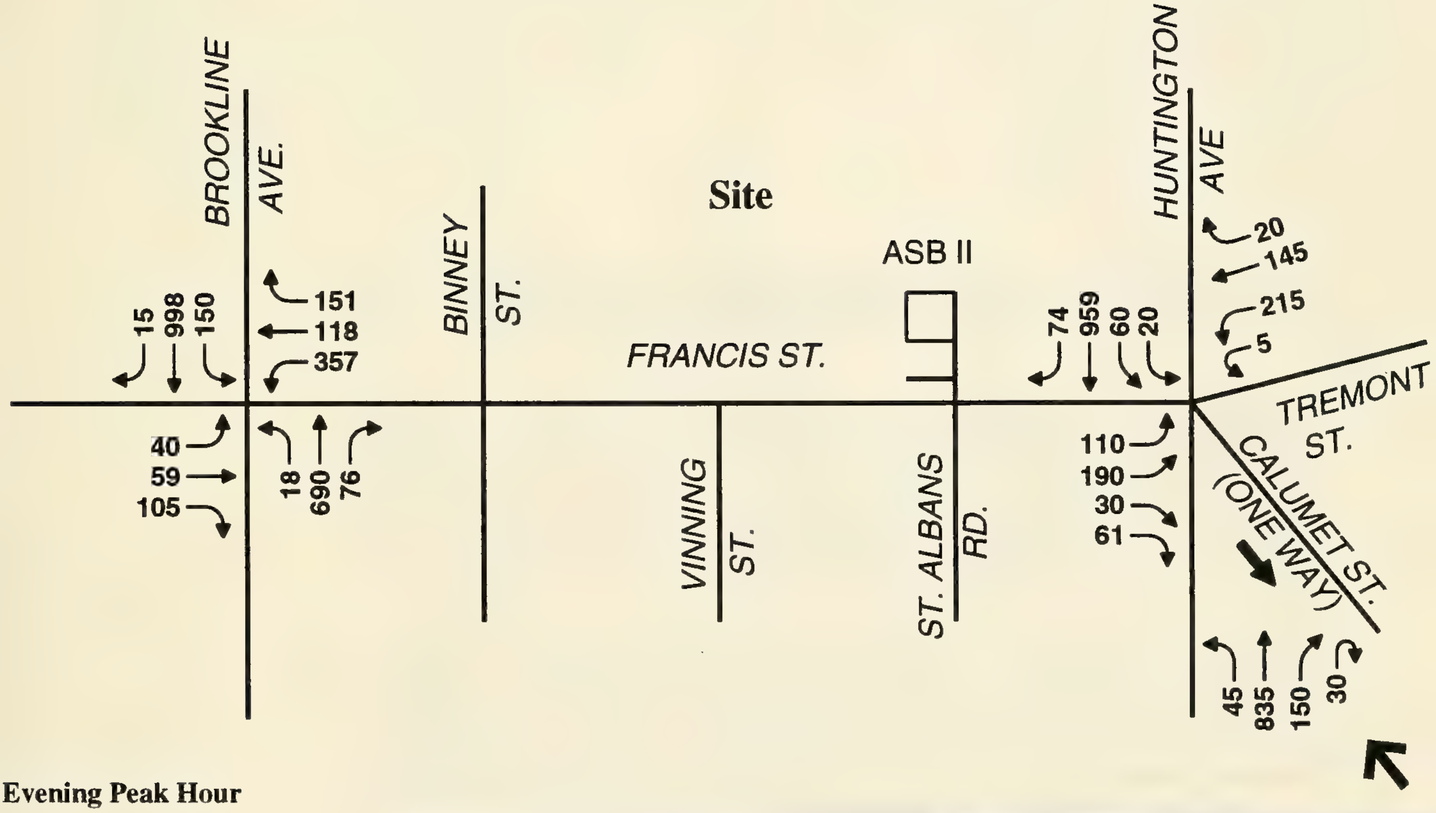
Vanasse Hangen Brustlin, Inc.

1993 No-Build
Peak Hour
Traffic Volumes

Figure 6



Morning Peak Hour



Evening Peak Hour

Vanasse Hangen Brustlin, Inc.

1993 Build
Peak Hour
Traffic Volumes

Figure 7

as a whole, considering only the critical lane groups, i.e., those groups that have the greatest demand for green time within each signal phase. This procedure assumes that green time has been appropriately allocated. Thus, it is possible to have an overall intersection v/c of less than 1.00 (under-capacity), but still have individual movements be oversaturated within the signal cycle if the green time has not been appropriately allocated to the various approaches.

The other major concept in signalized intersection analysis is level of service, which is defined in terms of delay. Delay represents a measure of driver discomfort, frustration, fuel consumption, and lost time. Specifically, level-of-service delay criteria are stated in average stopped delay (in seconds) per vehicle for a peak 15-minute analysis period. The criteria are presented in Table 9

Table 9 **LEVEL-OF-SERVICE DELAY CRITERIA FOR SIGNALIZED INTERSECTIONS**

Level of Service	Stopped Delay Per Vehicle (seconds)
A	≤5.0
B	5.1 to 15.0
C	15.1 to 25.0
D	25.1 to 40.0
E	40.1 to 60.0
F	>60.0

Source: Special Report 209, Highway Capacity Manual; Transportation Research Board; Washington, DC (1985).

Delay is a complex measure which depends upon a number of variables, listed in decreasing order of importance: the quality of signal progression, the cycle length, the allocation of green times, and v/c ratios. Of note is that v/c ratios, of all the factors cited, have the least effect on delay. Thus, for any given v/c ratio, a range of delay values (and, therefore, level of service) may result. Conversely, for a given level of service, the v/c ratio may lie anywhere within a broad range.

For the reasons stated above, both capacity and level of service must be carefully examined when analyzing a signalized intersection. The designation of an approach as operating at LOS F does not automatically imply that the entire intersection, approach, or lane group is overloaded, nor does a level of service in the A to E range automatically indicate that there is unused capacity available. Together these two parameters (capacity and delay) are used to evaluate signalized intersection performance.

The two study intersections were analyzed using the procedures previously described, under existing, No-Build and Build conditions in both the morning and evening peak hours. The results of these analyses are listed in Table 10.

Table 10 INTERSECTION ANALYSIS RESULTS (REVISED)

	Existing			1993 No-Build			1993 Build		
	Delay**	LOS***	Total Entering Vehicles	Delay	LOS	Total Entering Vehicles	Delay	LOS	Total Entering Vehicles
Morning Peak Hour:									
Brookline Avenue and Francis Street	16.4	C	2,290	60+	F	2,684	60+	F	2,733
Huntington Avenue and Francis Street	22.7	C	2,200	36.3	D	2,476	39.5	D	2,490
Evening Peak Hour:									
Brookline Avenue and Francis Street	61.5	F	2,460	60+	F	2,742	60+	F	2,777
Huntington Avenue and Francis Street	39.8	D	2,565	60+	F	2,931	60+	F	2,949

* Average stopped delay per vehicle in seconds.
** Level of service.
*** Volume-to-capacity ratio (for signalized intersections).

Existing Conditions

The analysis results presented in Table 10 indicate that average delays are in the LOS C or D range except at Brookline Avenue and Francis Street, which operates at LOS F in the evening peak hour. This is as a result of the backups from the intersection of the Riverway and Brookline Avenue which interfere with the operations of this intersection. While the Huntington Avenue intersection operates at LOS C, eastbound delays on Francis Street are still lengthy in the evening peak hour.

No-Build Conditions

The addition of background development traffic forecast for 1993 is anticipated to increase intersection delay and reduce level of service for the two locations studied. The predominant traffic increases are expected to include a fairly substantial increase in through traffic on Brookline Avenue. In particular, left turns on Brookline Avenue are expected to see increased delays.

Build Conditions

The deterioration in the level of service at the two study area intersections due to the project traffic is relatively insignificant when compared to the deterioration in level of service due to the background traffic. There is no change in level of service expected from No-Build to Build conditions, as indicated in the table. Expect for the

Huntington Avenue and Francis Street intersection in the morning peak hour, both the intersections are expected to operate at LOS F in the Build conditions. No significant impact is expected to occur from project-generated traffic at any of the study intersections during either peak hour. This is further evidenced by the small increases in total entering trips as shown in the table.

In order to help mitigate what are difficult traffic conditions in the area, BWH has not proposed to construct any new parking to support the project. The benefit of this policy is that it will minimize the number of new trips on area streets.

PARKING IMPACTS

The 1988 survey showed that peak parking demand at BWH occurs at 3:00 PM due to a major shift change and 30-minute overlap of departing and arriving staff. The survey showed that patient parking demand is relatively small at that hour. The peak campus parking demand was calculated by user category as part of the campus Transportation Master Plan. Therefore, the patient, visitor, staff, and physician parking demand increase due to the CSF (excluding the hotel) was determined by taking a ratio of each category's population increase to the existing population, and multiplying by the 1989 peak parking demand.

Hotel parking demand estimates by time of day are presented in a 1983 study by the Urban Land Institute.[15] The average 3:00 PM demand of 0.5 spaces per guest room was reduced by 0.2 spaces per room to reflect the conditions in the LMA described in the previous section on daily vehicle trips. The resulting estimated 3:00 PM parking demand of 6 spaces for 30 rooms is consistent with the very low parking demand (approximately 30 spaces) experienced at the 162-room Inn At Children's.[16]

As shown in Table 11, the expected total increase in peak parking demand (including hotel) is 105 spaces. Out of these 105 spaces, 75 are employee and physician spaces, 24 are patient and visitor spaces, and 6 are hotel related spaces.

15/ Shared Parking; Urban Land Institute; Washington, DC (1983).
16/ Telephone conversation with Mr. Robert Silvia, General Manager (November 20, 1989).

Table 11 CLINICAL SUPPORT FACILITY PEAK PARKING DEMAND

Category	Net New Staff*	Net New Persons on Typical Weekday**	3:00 PM Peak Net New Parking Space Demand**
Physicians:			
Active Staff	44	22	13
Resident	10	7	4
Subtotal	54	29	17
Employees:			
Registered Nurse	95	65	36
Licensed Practical Nurse	9	9	5
Technician	14	10	4
Secretary/Clerical	32	29	7
Support	24	21	6
Subtotal	174	134	58
Patients:			
In-Patients	N/A	11	1
Out-Patients	N/A	187	7
Subtotal	N/A	198	8
Visitors:			
Patient Visitors	N/A	110	13
Business	N/A	16	3
Subtotal	N/A	126	16
TOTAL	N/A	487	99
Hotel	N/A	N/A	6
TOTAL INCLUDING HOTEL			105

---

* Source: BWH Planning Department.

** Based on relationships established in the Transportation Master Plan (April 1989).

N/A = not applicable.

As mentioned earlier, no additional parking is proposed in conjunction with the project. MASCO will be leasing 46 spaces to the hospital, however, at the proposed 375 Longwood Avenue garage which will be completed before the proposed CSF project. BWH proposes to utilize these spaces for project generated employee and physician parking demand and the remaining spaces will be provided at 49 Lansdowne Street near Fenway Park which is currently underutilized.

Some of the visitor, patient, and hotel-related peak parking demand of 30 spaces can be accommodated at the ASB II Garage and the Service Center Garage. The existing 3:00 PM utilization of the two garages indicate that there are typically 9 spaces available at ASB II Garage and 8 spaces at the Service Center Garage. In order to insure that its patients and visitor parking needs can be met, BWH intends to shift staff parkers from the Service Center Garage to other, more remote facilities as the project is completed. Another benefit of this approach is that it will help mitigate the project of peak hour traffic increases.

PUBLIC TRANSPORTATION IMPACTS

The project is expected to generate approximately 176 new transit trips daily, including about 40 in the morning peak hour and about 47 in the evening peak hour. These net new riders are not expected to have a significant effect on the public transportation routes serving the site, which have a collective scheduled planning capacity of approximately 2,800 passengers per direction in the morning peak hour and 2,300 passengers per direction in the evening peak hour.

CONSTRUCTION IMPACTS

Construction Worker Trip Generation and Parking

The construction work will require about 30 months, with an anticipated work shift of 7:00 AM to 3:30 PM. The number of workers required during the construction period will vary, with an estimated average daily work force of 165 workers during the busiest months and 16 workers during the slowest months, with an average of 95 workers for the construction period. The maximum of 165 daily workers translates to an estimated 66 vehicle trips[17] arriving between 6:30 and 7:00 AM and 66 vehicle trips departing between 3:30 to 4:00 PM. As the construction workers usually arrive and depart before the commuter peak hours, the construction traffic is not expected to have a significant impact on the peak hour traffic. Parking for construction workers will not be available on site. Parking for construction workers is proposed at the 49 Lansdowne Street which presently has excess capacity (70 to 80 spaces), the workers will be shuttled to the site by bus. Other measures to discourage the use of automobiles by construction workers are presented in the Mitigation section of this report.

Construction Vehicle Routings and Volumes

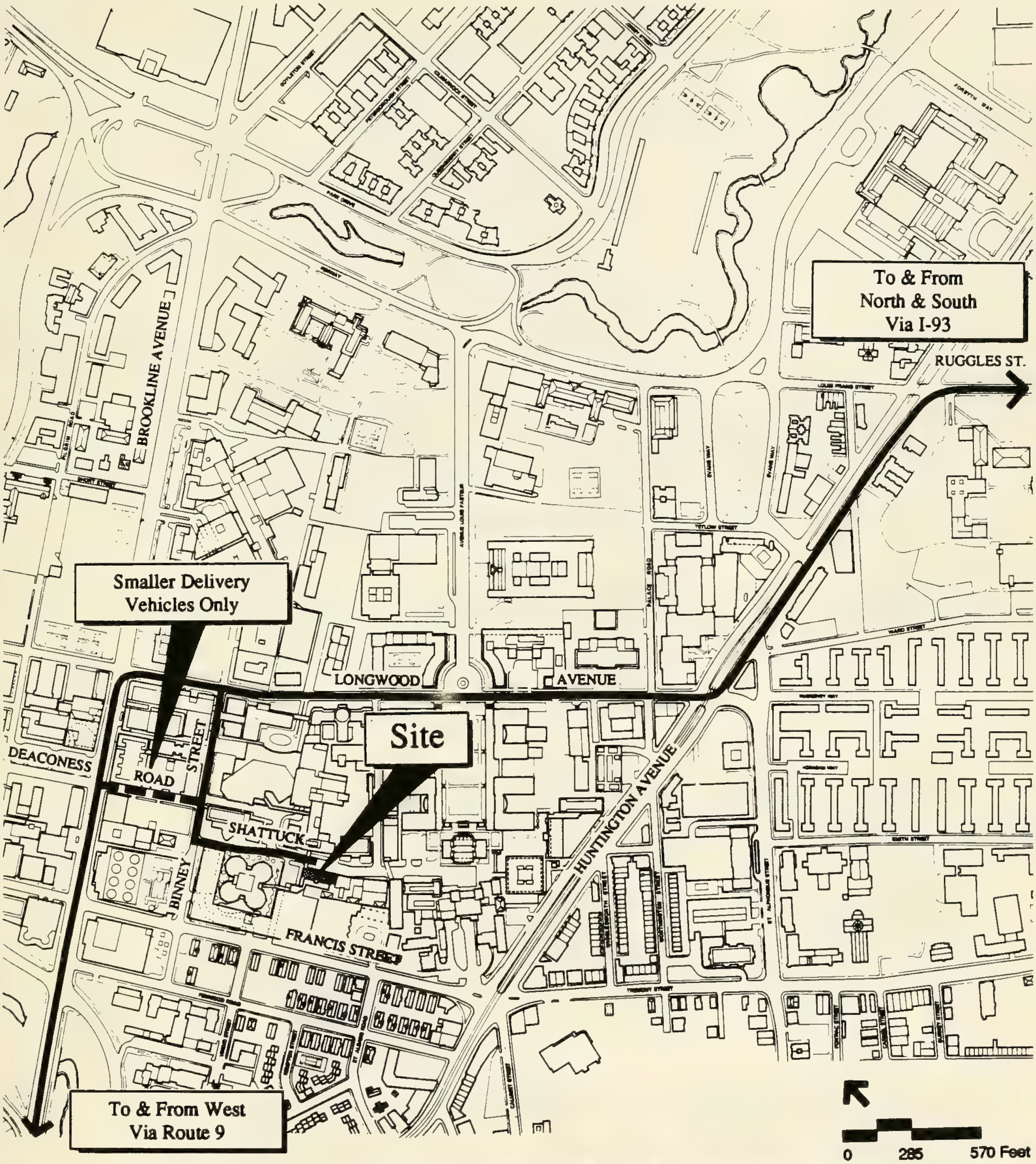
At the present time, BWH does not know the geographical distribution of truck deliveries. As a result, a comprehensive plan to handle trucking activity from any direction has been developed. Trucks from the north, northeast, and southeast are expected to exit I-93 at Massachusetts Avenue, arriving at the site via Ruggles Street to Huntington Avenue to Longwood Avenue to Binney Street to Shattuck Street and departing via the same route. Trucks to and from the southwest, west, and northwest are expected to exit I-95/128 at Route 9, arriving at the site via Brookline Avenue to Longwood Avenue to Binney Street to Shattuck Street and departing via the same route. The proposed truck routes as shown in Figure 8, has been

---

[17] Based on Longwood Medical Research Center Transportation Access Plan; Vanasse Hangen Brustlin, Inc. (July 1988); LMA construction workers: mode split = 56 percent by auto and VOR = 1.4.

developed to avoid creating impacts on Francis Street. Also, smaller delivery vehicles could use Deaconess Road instead, as shown in Figure 8.

The number of construction trucks during the construction period vary. On average, over the course of the demolition and construction phase, truck volumes of 10 to 12 arrivals and 10 to 12 departures per workday are expected. The minimum average daily truck deliveries are expected to be 5 deliveries during the slowest months of construction. The highest daily truck volumes are expected during the excavation phase. During this period, daily truck volumes are expected to average 24 arrivals and 24 departures. Assuming an even distribution over an 8-hour day, this translates to approximately 3 arrivals and 3 departures per hour. The traffic impacts of these trips is expected to be negligible.



Vanasse Hangen Brustlin, Inc.

Proposed Construction
Vehicle Routes

Figure 8

MITIGATION AND MONITORING

INTRODUCTION

As described in the following section of the Transportation Master Plan, the hospital has embarked upon an aggressive program aimed at reducing the number of vehicles used for commuting to BWH. In addition, BWH is a member of the newly created Longwood Medical Area Transportation Management Organization (TMO) operated by the Medical Area Service Corporation (MASCO). The TMO was established to provide a coordinated areawide program of traffic and parking demand reduction.

The recommended management and mitigation plan presented in this final section of the report consists of travel demand management strategies, traffic operations improvements, and other recommendations to support the programmed growth of the hospital.

DEMAND MANAGEMENT

To address the parking deficit forecast, BWH does not plan to build additional parking supply. Instead, the hospital has embarked upon a two-phase approach to meet its needs. The first is to obtain additional off-site parking at 375 Longwood Avenue and 49 Landsdowne Street. Secondly, the BWH will continue its aggressive program aimed at reducing the number of vehicles used for commuting to BWH. This demand reduction program, developed jointly by BWH and VHB, combines disincentives for driving alone, incentives and assistance for commuting by alternative modes, and publicity to make BWH staff aware of the alternative modes and the incentives provided. BWH is committed to this program and has already begun to implement it.

Increase Parking Fees

Numerous studies have shown that parking fees are the most important factor in a commuter's decision whether or not to drive to work. Consistent with the recommendations of the Longwood Medical Area Transportation Study, BWH recently raised employee parking prices (by 14 percent) in the context of a plan which attempts to rationalize the parking system by charging the highest rates at the most conveniently located facilities.

Establish an LMA Parking Committee

Intense competition between LMA institutions for qualified employees makes it difficult for any one institution to make parking policy changes (e.g., price increases) which are unpalatable to its employees. A single parking policy, coordinated by the institutions as a unified effort, might be seen by employees as a rational, even if unpleasant, solution to a difficult problem.

Therefore, BWH will continue to take an active role in the LMA parking committee. The parking directors of the area hospitals have already begun to meet and address these issues with a common theme. This group will share information regarding parking rates and act collectively in setting parking policies to achieve areawide transportation goals. Through such coordination, a portion of the funds saved through parking subsidy reduction could be used to provide more cost-effective employee benefits so as to improve the LMA institutions' ability to attract and retain qualified staff.

Preferential Parking For Vanpools and Carpools

Reserving the most convenient spaces for carpools and vanpools has proven an effective incentive for ridesharing, because the convenience of a choice parking spot is often sufficient to offset the inconvenience of sharing a ride. While differential pricing schemes are prone to abuse, preferential locations are self-enforcing because solo drivers are embarrassed to be seen parking routinely in carpool spaces. Accordingly, it is recommended that BWH designate carpool and vanpool spaces in the most convenient locations, for example, the West Plaza, the ASB II Garage, and the BLI complex courtyard.

Transit Subsidies for Employees

Transit subsidies, especially when combined with increased parking prices, can have a direct effect on mode choice. Employee transit subsidies are becoming increasingly prevalent. In the Longwood Medical Area, Children's Hospital, Beth Israel Hospital, the Harvard Medical School, and the New England Deaconess Hospital all subsidize employee transit passes, and the Boston Transportation Department all but requires employee transit subsidies for new developments.

A subtle advantage of an employee transit subsidy program is that it may facilitate an appropriate reduction of parking subsidies. While parking price increases alone can control parking demand and meet transportation system objectives, total reliance on employee parking price increases may be misinterpreted as an underhanded pay cut. Because the transit pass subsidy is an employee fringe benefit, its inclusion in the plan makes clear that transportation management, not benefit reduction, is the objective.

BWH now sells MBTA passes at an average of 20-percent discount to its employees, at the cashier's office in the patient tower. The hospital is committed to implementing an MBTA pass subsidy for all its employees. According to BWH the employee participation has increased from 400 last year to 2,000 at present.

Areawide Ridesharing Coordination

As part of the Longwood Medical Area Transportation Management Organization, Commuteworks, the Medical Area Service Corporation (MASCO), operates a centralized ridesharing matching service with the assistance of the state-funded Caravan for Commuters, Inc. The BWH supports these efforts through membership fees and assessments. It is recommended that rideshare matching for the LMA continue to be handled centrally by MASCO, because the larger database of commuters increases the chances of successful carpools and vanpools. BWH will continue to devote the necessary resources to support ridesharing coordination.

Promotion of Alternatives to Driving Alone

The hospital will promote ridesharing and transit usage through articles in its weekly newsletter. BWH will also provide Commuteworks brochures and other information to new employees.

Such a strategy might have a negligible impact by itself, but it could play an important supporting role in other traffic reduction programs. For example, a system of preferential parking for carpools would not be effective without a campaign to make commuters aware of the priority system.

Alternative Work Schedules

Alternative work schedules can reduce traffic congestion by spreading a given number of daily vehicle trips more evenly and reducing peak-hour volumes. In some cases, even total daily traffic volume can be reduced through programs that allow a given number of hours to be worked on longer shifts on fewer days. By allowing workers to adjust their commuting schedules, flexible work hours sometimes facilitate carpool formation.

Alternative work schedules already exist at BWH. Nurses' shifts not only have a variety of start times; they also have varying lengths. Physicians come and go as needed, and researchers set their own (often irregular) hours. Clerical employees work staggered hours as well.

The hospital is committed to flexibility in work schedules to meet its own objectives as well as those of the transportation system. The current shortage in many categories of critical staff necessitates a flexible approach to recruitment.

TRAFFIC OPERATIONS IMPROVEMENTS

Through its support of MASCO, BWH has sponsored an extensive study of traffic operations and transportation conditions in the Longwood Medical Area. That study recommended numerous improvements to the area's transportation system, several of which have now been implemented.

To improve the deficient conditions forecasted at the two study area intersections following measures are recommended:

Brookline Avenue and Francis Street

- Signal timings for the intersection should be coordinated with the Brookline Avenue and Riverway intersection, to eliminate the traffic interference due to backups from this intersection. This will require a cooperative arrangement between the MDC and the Boston Transportation Department.
- Phase 2 of the Brookline Avenue restriping plan which would eliminate on-street parking already approved on technical merits by BTD.

Huntington Avenue and Francis Street

- Consider striping two approach lanes westbound on Francis Street near the intersection.
- Enforce morning peak parking restriction on Huntington northbound approach.

On a separate track, BWH is proposing to relocate its main entrance approximately 200 feet to the east on Francis Street. This change would serve to reduce the pedestrian and vehicle conflicts, and increase the storage length in the West Plaza drop-off area, thus reducing the queuing onto Francis Street.

OTHER RECOMMENDATIONS

Shipping and Receiving

It is recommended that BWH actively pursue its goals of scheduling deliveries for specific times and consolidating deliveries by reducing the number of its vendors. The new loading bays in the West Plaza will also provide additional loading capacity.

Pedestrian System

It is further recommended that BWH and its architects work closely with the Boston Redevelopment Authority so that new buildings can be designed with an eye toward accommodating the pedestrian desire lines of the general public without compromising the security needs of the hospital.

CONCLUSION

In summary, the hospital's objectives are to address the projected staff parking deficit by reducing parking demand and utilizing off-site parking rather than by increasing parking supply in the project area. While BWH strongly supports MASCO's and the city of Boston's efforts to improve traffic flow in the Longwood Medical Area, the hospital is committed to doing its part to reduce vehicle-trip generation and encourage the use of alternative transportation modes.

CONSTRUCTION MANAGEMENT

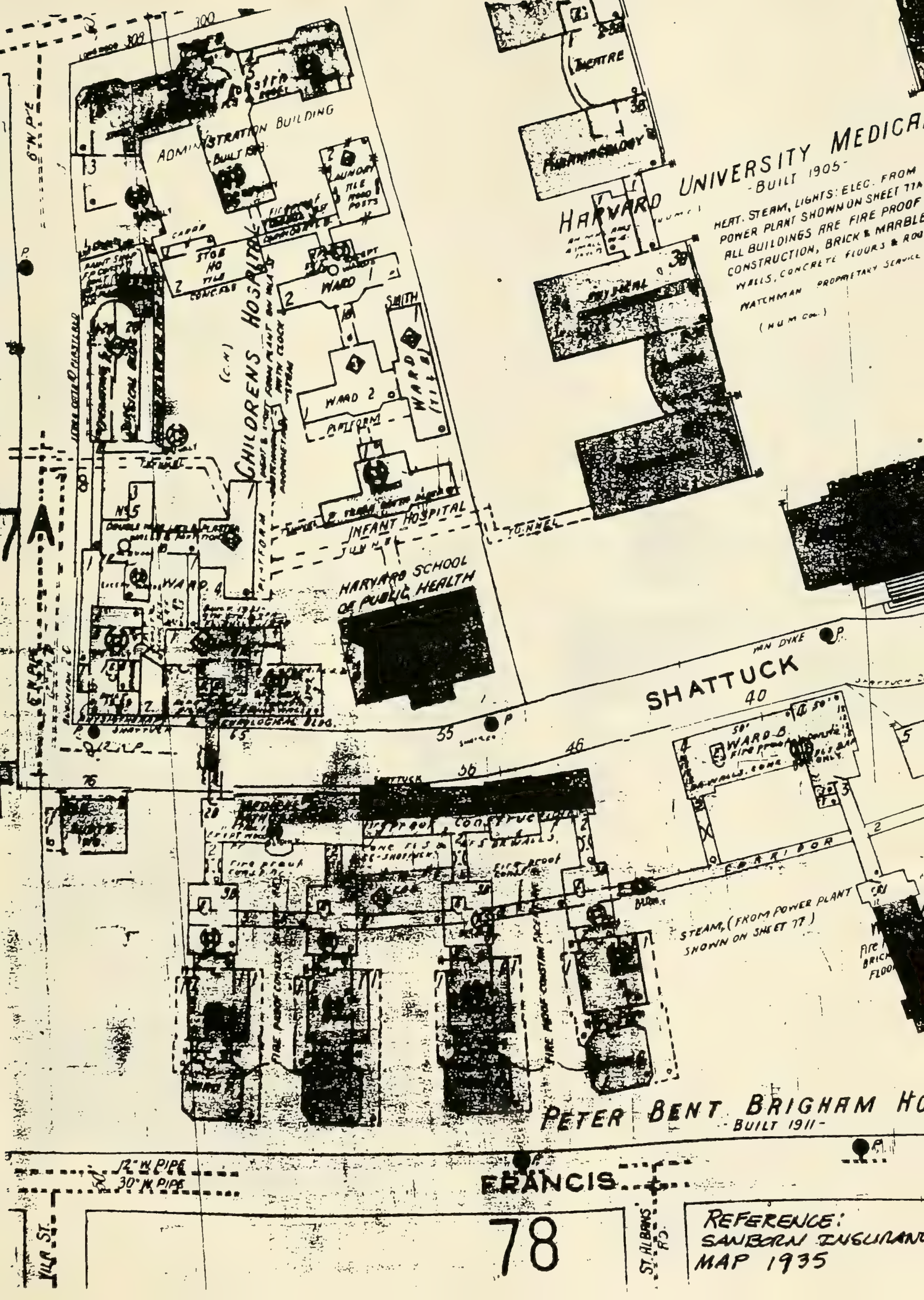
BWH will negotiate and sign a construction management agreement with the BTD. The following elements are proposed:

- Secure fencing, staging, and bracing will be provided to protect nearby pedestrian traffic; walkways will be covered.
- Police officer control will be provided as needed to assure pedestrian safety.
- All staging areas for construction materials are to be located on private property.
- Construction worker parking will not be permitted on the site or adjacent to the construction area, with the exception of one or two vehicles. Instead, construction worker parking will be provided off site at existing parking facilities.
- Each construction worker who agrees to commute to the job site via public transportation for a full calendar month will be offered an MBTA pass for that month at a discount.
- Movement of construction materials and equipment to and from the job site will be staggered over the course of the workday.
- Clear designated truck routes for the movement of demolition debris. Construction materials will be provided.

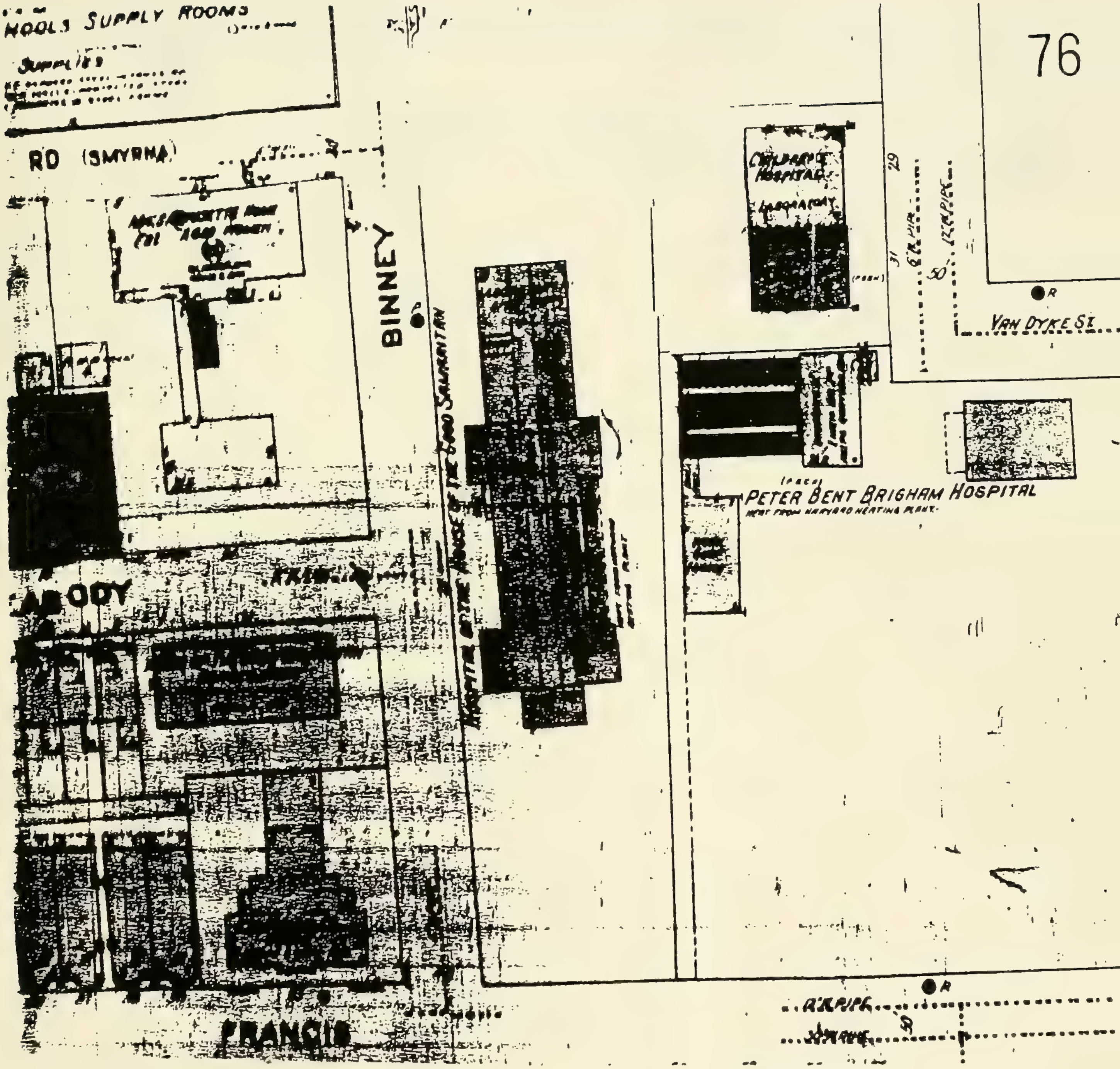
B W H

APPENDIX F

Site History Information



REFERENCE:
SANBORN INSURAN
MAP 1935



REFERENCE:
SANBORN INSURANCE
MAP 1935

B W H

APPENDIX G

Letter from Steven R. Pendery, City Archaeologist
July 11, 1991

City of Boston
The Environment
Department

Raymond L. Flynn
Mayor

orraine M. Downey
Director

ston City Hall/Room 805
ston, Massachusetts 02201
17/725-4416 or 725-3850

July 11, 1991

Mr. J. Fischman
HMM Associates

Dear Mr. Fischman:

Thank you for contacting me concerning the planned construction of the clinical support facility for Brigham and Women's Hospital in Boston. According to your verbal description of the proposed project, which will be entirely contained within the footprint of an existing building at the site, and the project will not involve extending the cellar depth nor extensive new utility construction, it is my opinion that the project will have no archaeological impact. Our understanding is that you will forward to me at your earliest convenience a site plan documenting this.

Thank you for your assistance.

Sincerely,

Steven R. Pendery
City Archaeologist

cc: A. Pugsley
B. Simon, MHC
R. Mertens, BRA

Air Pollution Control, Boston Art, Back Bay Architectural, Beacon Hill Architectural, Boston Landmarks and the Conservation Commissions

B W H

APPENDIX H

Letter from Robert B. Debonis, Robert W. Sullivan, Inc., July 1, 1991

Robert W. Sullivan, Inc.
Consulting Engineers
Unit 302, Union Wharf
Boston, Massachusetts 02109
(617) 523-8227
(Fax) 523-8016
A. Eugene Sullivan P.E.
Anthony T. DiStefano P.E.
Bahig A. Kaldas P.E.
George H. Minahan
Eugene B. Kingman
Steven P. Quieto

July 1, 1991

Tsoi/Kobus & Associates, Inc.
50 Church Street
Cambridge, MA 02138

ATT: Richard Moon

#3223

RE: Brigham & Women's Hospital
Clinical Support Facility

Dear Richard:

On July 1, 1991 we met with Peter Wong of the Boston Water and Sewer Commission and spoke with Tom Condon of the Town of Brookline Department of Public Works relative to the Clinical Support Facility sewage flow which enters a City of Boston sewer on Francis Street and eventually ties into a Town of Brookline sewer.

Peter Wong stated that the connection to the Francis Street sewer would not be a problem and our previous correspondence with the Commission confirms this. Also he said that because the interconnection between the City of Boston sewer and the Town of Brookline sewer is existing and sewage from Boston has been flowing through this Brookline sewer for a number of years, he did not foresee a problem.

Ton Condon stated that the City of Boston was granted a sewer easement many years ago which allowed them to tie into the Brookline Sewer. Tom stated that this additional flow would not be a problem.

Very truly yours,

ROBERT W. SULLIVAN, INC.

Robert V. DeBonis

ROBERT V. DEBONIS

RVD:mjh

cc: Mitch Fischman - HMM Associates
Eric Hooper - HMM Associates
Peter Wong - BW&SC
Tom Condon - BDPW

B W H

APPENDIX I

Infrastructure System Capacity Verification from MATEP

C M C

Cogeneration Management
Company, Inc.

474 Brookline Avenue
Boston, Massachusetts 02215
617/732-2350
Fax 617/732-2365

Donald S. Yeaple
Vice President
and
General Manager

July 1, 1991

Mr. Ed Shamon,
Director of Design & Construction
BRIGHAM & WOMENS HOSPITAL
75 Francis Street
Boston, MA 02215

Re: Availability of Utility Services

Dear Mr. Shamon:

Confirming our discussion today, I am pleased to inform you that electrical power and steam can be made available to Brigham and Womens Hospital for its proposed Clinical Support Facility.

Plant capacity for 1100 tons of chilled water will be made available pending negotiation of an amended contract for chilled water service by Brigham and Womens Hospital and CMC.

Sincerely,

Donald S Yeaple

Donald S. Yeaple

DSY/mlt

RECEIVED
JUL 3 - 1991
BWH-DESIGN & CONST.

A wholly owned subsidiary of Harvard University serving the energy needs of hospitals, medical schools and research facilities in the Longwood Medical Area.

175